

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:31:42 ; Search time 206.5 Seconds
(without alignments)
917.057 Million cell updates/sec

Title: US-08-981-087B-1
Perfect score: 2288
Sequence: 1 SYTNDKILLYFNKLYKKIK.....TSSNGCFWFSKHEGWQEN 431

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A Geneseq 21:.*
1: geneseqp1980s:.*
2: geneseqp1990s:.*
3: geneseqp2000s:.*
4: geneseqp2001s:.*
5: geneseqp2002s:.*
6: geneseqp2003as:.*
7: geneseqp2003bs:.*
8: geneseqp2004s:.*
9: geneseqp2005s:.*

Pred: No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	2288	100.0	431	2 AAW09014	Immunogen
2	2288	100.0	432	4 AAB04103	Botulinum
3	2288	100.0	432	4 AAB04096	Botulinum
4	2288	100.0	645	4 AAE07894	Aae07894 Modified
5	2288	100.0	645	6 AAE35692	Dipt HN d
6	2288	100.0	657	6 AAE35693	Aae35693 BoNT/F-Hc
7	2288	100.0	657	6 AAE35694	Aae35694 BoNT/F-Hc
8	2288	100.0	685	4 AAE07893	Aae07893 Modified
9	2288	100.0	862	4 AAE07890	Aae07890 Modified
10	2288	100.0	887	4 AAE07892	Aae07892 Modified
11	2288	100.0	979	6 AAE35713	BoNT/F-Hc
12	2288	100.0	1032	4 AAE07901	C. botuli
13	2288	100.0	1059	3 AAY93309	Aay93309 A mangane
14	2288	100.0	1084	3 AAY93312	Aay93312 A mangane
15	2288	100.0	1092	4 AAE07900	Aae07900 C. botuli
16	2288	100.0	1192	6 AAE35711	BoNT/F-Hc
17	2288	100.0	1192	6 AAE35710	BoNT/F-Hc
18	2271	99.3	432	3 AAY77138	Synthetic
19	1800	78.7	448	3 AAW68399	Clostridi
20	1451.5	63.4	449	3 AAY77137	Synthetic
21	1451.5	63.4	449	4 AAB04094	Botulinum
22	1447.5	63.3	452	2 AAW68396	Clostridi
23	1426	62.3	451	2 AAW68395	Clostridi
24	1423.5	62.2	419	4 AAB04095	Botulinum

25	1355.5	59.2	660	4 AAE07898	Aae07898 Modified
26	1120.5	49.0	859	9 ADZ69764	Botulinum
27	1120.5	49.0	1067	3 AAY93307	Aay93307 A mangane
28	1120.5	49.0	1092	2 AAY93310	Aay93310 A mangane
29	1120.5	49.0	1296	2 AAR95010	C. botuli
30	1120.5	49.0	1296	9 ADW11038	Full leng
31	1120.5	49.0	1296	9 ADZ36018	C. botuli
32	1120.5	49.0	1296	9 ADZ60275	Clostridi
33	1120.5	49.0	1296	9 ADZ69730	Botulinum
34	1120.5	49.0	1302	9 ADZ69729	Clostridi
35	1120.5	49.0	1302	9 ADZ69831	Inactive
36	1113.5	48.7	437	4 AAB04088	Botulinum
37	1113.5	48.7	438	2 AAR95008	Type A ne
38	1113.5	48.7	438	2 AAW68389	Clostridi
39	1113.5	48.7	438	3 AAY77134	Synthetic
40	1113.5	48.7	445	2 AAW68391	Clostridi
41	1113.5	48.7	462	2 AAR95009	Type A ne
42	1113.5	48.7	462	2 AAW68390	Clostridi
43	1111.5	48.6	434	4 AAB04089	Botulinum
44	1111.5	48.6	435	4 AAB04090	Botulinum
45	1106.5	48.4	837	3 AAY77140	Native bo

ALIGNMENTS

RESULT 1
AAW09014
ID AAW09014 standard; protein; 431 AA.
XX AC AAW09014;
XX AC
XX AC
DT 17-OCT-2003 (revised)
DT 31-MAR-1997 (first entry)
XX
DE Immunogenic type F botulinum toxin heavy chain (aa848-1278).
XX Botulinum toxin; neurotoxin; BoNT/F; immunogen; vaccine; botulinum.
XX Clostridium botulinum; type F strain Langeland.
XX
XX WO9641881-A1.
XX
XX 27-DEC-1996.
XX
XX 12-JUN-1996; 96WO-GB001409.
XX
XX 12-JUN-1995; 95GB-00011909.
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX
XX Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;
WPI; 1997-065467/06.
N-PSDB; AAT48100.
XX
XX Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.
XX
XX Claim 5; Page 16-17; 37pp; English.
XX
XX A polypeptide (AAW09014) comprises the heavy chain (amino acids 848-1278) of a type F botulinum neurotoxin (BoNT/F), and can be produced using a synthetic gene (AAT48101) based on the natural gene sequence (AAT48100) for the heavy chain. The polypeptides and its fragments (see also AAW09015-17) lack the light chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

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SQ Sequence 431 AA;
Query Match 100.0%; Score 2288; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 2.6e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYSNISINGDVYIYSTNRNQF 60
DB 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYSNISINGDVYIYSTNRNQF 60
QY 61 GYSSKPESEVNIAQNNDIYNGRYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 120
DB 61 GYSSKPESEVNIAQNNDIYNGRYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 120
QY 121 WKISLNTYKLIITLQDTAGNKKLVFNQYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 180
DB 121 WKISLNTYKLIITLQDTAGNKKLVFNQYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 180
QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKVPFDTGLGKTEIETLYSDEPDP 240
DB 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKVPFDTGLGKTEIETLYSDEPDP 240
QY 241 SILKDFMGNYLLYKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRLYTG 300
DB 241 SILKDFMGNYLLYKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRLYTG 300
QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISTAKPEKIKLIRTSNS 360
DB 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISTAKPEKIKLIRTSNS 360
QY 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
DB 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
QY 421 FISKEHGQEN 431
DB 421 FISKEHGQEN 431
RESULT 2
AAB04103
ID AAB04103 standard; protein; 432 AA.
AC AAB04103;
DT 11-APR-2001 (first entry)
DE Botulism toxin heavy chain C-terminal sequence (serotype F).
KW Botuliam; toxin; neurotoxin; heavy chain; recombinant expression;
KW recombinant vector; antigen; immune response; vaccine; bacterium;
KW infection.
XX
OS Synthetic.
OS Clostridium botulinum.
XX
XX WO200067700-A2.
XX
XX 16-NOV-2000.
XX
XX 12-MAY-2000; 2000WO-US012890.
XX
XX 12-MAY-1999; 99US-0133865P.
XX
XX 12-MAY-1999; 99US-0133866P.
XX
XX 12-MAY-1999; 99US-0133867P.
XX
XX 12-MAY-1999; 99US-0133868P.
XX
XX 12-MAY-1999; 99US-0133869P.
XX
XX 29-JUL-1999; 99US-0146192P.
XX
XX (USSA ) US ARMY MEDICAL RES & MATERIAL COMMAND.
PA
XX Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;
PI

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XX WPI; 2001-016048/02.
DR N-PSDB; AAA54499.
XX
XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
PT against botulism.
XX
PS Disclosure; Fig 18b; 73pp; English.
XX
CC Botulism neurotoxins are translated as a single 150 kDa polypeptide chain
CC and then posttranslationally nicked, forming a dichain consisting of a
CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BONT)
CC can be used in recombinant expression vectors and expressed in
CC transformed cells to produce peptide antigens useful for eliciting an
CC immune response to give protective immunity against botulinum neurotoxin,
CC which causes botulism. The nucleic acids are expressible in a recombinant
CC organism such as Escherichia coli or Pichia pastoris. The use of
CC recombinant nucleic acids are advantageous since it eliminates the need
CC to culture large quantities of hazardous toxin-producing bacterium.
CC Production yield from the genetically engineered product is also high and
CC cost of production is lower. The nucleic acids can be derived from
CC Clostridium botulinum serotypes A-G
XX
SQ Sequence 432 AA;
Query Match 100.0%; Score 2288; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 2.6e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYSNISINGDVYIYSTNRNQF 60
DB 2 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYSNISINGDVYIYSTNRNQF 61
QY 61 GYSSKPESEVNIAQNNDIYNGRYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 120
DB 62 GYSSKPESEVNIAQNNDIYNGRYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 121
QY 121 WKISLNTYKLIITLQDTAGNKKLVFNQYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 180
DB 122 WKISLNTYKLIITLQDTAGNKKLVFNQYQNFSPFWVRIPKYPKFNKNLNNEYTIIDCIRNNSG 181
QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKVPFDTGLGKTEIETLYSDEPDP 240
DB 182 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKVPFDTGLGKTEIETLYSDEPDP 241
QY 241 SILKDFMGNYLLYKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRLYTG 300
DB 242 SILKDFMGNYLLYKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRLYTG 301
QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISTAKPEKIKLIRTSNS 360
DB 302 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISTAKPEKIKLIRTSNS 361
QY 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
DB 362 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 421
QY 421 FISKEHGQEN 431
DB 422 FISKEHGQEN 432
RESULT 3
AAB04096
ID AAB04096 standard; protein; 432 AA.
XX
XX AAB04096;
XX
XX 11-APR-2001 (first entry)
XX
XX

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Botulism toxin heavy chain C-terminal sequence (serotype F).

Botulism; toxin; neurotoxin; heavy chain; recombinant expression;
recombinant vector; antigen; immune response; vaccine; bacterium;
infection.

Synthetic.
Clostridium botulinum.

WO200067700-A2.

16-NOV-2000.

12-MAY-2000; 2000WO-US012890.

12-MAY-1999; 99US-0133865P.

12-MAY-1999; 99US-0133866P.

12-MAY-1999; 99US-0133867P.

12-MAY-1999; 99US-0133868P.

12-MAY-1999; 99US-0133869P.

12-MAY-1999; 99US-0133873P.

29-JUL-1999; 99US-0146192P.

(USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

WPI; 2001-016048/02.

N-PSDB; AAA54490.

New nucleic acids encoding the carboxy- or amino-terminal portions of the heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine against botulism.

Claim 3; Fig 9b; 73pp; English.

Botulism neurotoxins are translated as a single 150 kDa polypeptide chain and then posttranslationally nicked, forming a dichain consisting of a 100 kDa heavy chain and a 50 kDa light chain which remain linked by a disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino-terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT) can be used in recombinant expression vectors and expressed in transformed cells to produce peptide antigens useful for eliciting an immune response to give protective immunity against botulinum neurotoxin, which causes botulism. The nucleic acids are expressible in a recombinant organisms such as *Escherichia coli* or *Pichia pastoris*. The use of recombinant nucleic acids are advantageous since it eliminates the need to culture large quantities of hazardous toxin-producing bacterium. CC to culture large quantities of hazardous toxin-producing bacterium. CC Production yield from the genetically engineered product is also high and CC cost of production is lower. The nucleic acids can be derived from CC Clostridium botulinum serotypes A-G

Sequence 432 AA;

Query Match 100.0%; Score 2288; DB 4; Length 432;

Best Local Similarity 100.0%; Pred. No. 2.6e-167; Indels 0; Gaps 0;

Matches 431; Conservative 0; Mismatches 0;

1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFDISGYSNISINGDVYIYSTNRQF 60

2 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFDISGYSNISINGDVYIYSTNRQF 61

61 GYSSKPSVNTAQNNDIYNGRYQNFSPWVRIPKYNKVLNNEYTIIDCIRNNSG 120

62 GYSSKPSVNTAQNNDIYNGRYQNFSPWVRIPKYNKVLNNEYTIIDCIRNNSG 121

121 WKISLNNKLIWTLQDTAGNOKLVFNVTQMISIDYINKVFTVITNNRLGNSRYIYNG 180

122 WKISLNNKLIWTLQDTAGNOKLVFNVTQMISIDYINKVFTVITNNRLGNSRYIYNG 181

181 NLIDEKISNGLDIHVSNDILFKIVGNCNDRYVGRYKVFVDFTELKTEIETLYSDEPDP 240

182 NLIDEKISNGLDIHVSNDILFKIVGNCNDRYVGRYKVFVDFTELKTEIETLYSDEPDP 241

QY 241 SILKDFWGNLYLLNKRYLLNLRLRTDKSITQNSFNFLNINQORGVYQKPNIFSNTLYTGV 300
DB 242 SILKDFWGNLYLLNKRYLLNLRLRTDKSITQNSFNFLNINQORGVYQKPNIFSNTLYTGV 301
QY 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 360
DB 302 EVIIRKNGSTDISTNDFVRKNDLAYINVVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 361
QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
DB 362 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 421
QY 421 FISKEHGWQEN 431
DB 422 FISKEHGWQEN 432

RESULT 4

AAE07894

ID AAE07894 standard; protein; 645 AA.

XX AC AAE07894;

XX DT 11-SEP-2003 (revised)

XX DT 01-NOV-2001 (first entry)

XX DE Modified clostridial heavy chain fragment #1.

XX KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;

XX KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;

XX KW diphtheria neurotoxin; botulinum neurotoxin type F; BoNT/F.

XX OS Corynebacterium diphtheriae.

XX OS Clostridium botulinum.

XX OS Chimeric.

XX PN WO200158936-A2.

XX PD 16-AUG-2001.

XX PF 04-DEC-2000; 2000WO-GB004644.

XX PR 02-DEC-1999; 99GB-00028530.

XX PR 07-APR-2000; 2000GB-00008658.

XX PA (MTCR-) MICROBIOLOGICAL RES AUTHORITY.

XX PI Shone CC, Sutton JM, Silman N;

XX DR WPI; 2001-514643/56.

XX PT New non toxic polypeptide for delivery of a therapeutic agent for the treatment of a CNS disorder comprising a binding domain that translocates the therapeutic agent into the neuronal cells.

XX PS Example 2; Page 44; 50pp; English.

XX CC The invention relates to a non toxic polypeptide, for delivery of a therapeutic agent to a neuronal cell, which comprises a binding domain (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as Hc) that binds to the neuronal cell and a translocation domain (amino terminal half of HC, designated as HN), that translocates the therapeutic agent into the neuronal cell, where the translocation domain is not a HN domain of a clostridial neurotoxin and is not a fragment or derivative of a HN domain of a clostridial toxin. Polypeptides of the invention are useful for the treatment of a disease state associated with neuronal cells. The polypeptide constructs are useful for delivering therapeutic substances to neuronal cells. They are useful to treat disorders of the CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours and infection. They are also useful in gene therapy. The present sequence is modified clostridial heavy chain fragment. This sequence is constructed by fusing the binding domain of botulinum neurotoxin type F

CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
 CC 11-SEP-2003 to standardise OS field)
 XX
 SQ Sequence 645 AA;

Query Match 100.0%; Score 2288; DB 4; Length 645;
 Best Local Similarity 100.0%; Pred. No. 4.3e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 215 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 274
 QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNYYTIIDCIRNNNSG 120
 DB 275 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNYYTIIDCIRNNNSG 334
 QY 121 WKISLNYNKKIILWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNLGSRIYING 180
 DB 335 WKISLNYNKKIILWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNLGSRIYING 394
 QY 181 NLIDEKISNLGDIHVSNDNLFKIVGCDNDRYVYRIRYKVFDTLKGTEIETLYSDPDP 240
 DB 395 NLIDEKISNLGDIHVSNDNLFKIVGCDNDRYVYRIRYKVFDTLKGTEIETLYSDPDP 454
 QY 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLVTGV 300
 DB 455 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLVTGV 514
 QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIKLIRTSNSN 360
 DB 515 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIKLIRTSNSN 574
 QY 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
 DB 575 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 634
 QY 421 FISKEHGWQEN 431
 DB 635 FISKEHGWQEN 645

RESULT 5
 AAE35692
 ID AAE35692 standard; protein; 645 AA.
 XX AC AAE35692;
 XX DT 23-OCT-2003 (revised)
 XX DT 17-JUN-2003 (first entry)
 XX DE Dipt HN domain-BoNT/F-Hc fusion construct.
 KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW translocation domain; HN domain; Dipt; Hc; botulinum type F neurotoxin;
 KW binding domain; BoNT/F.
 XX Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Chimeric.
 XX WO200296467-A2.
 XX 05-DEC-2002.
 XX 21-MAY-2002; 2002WO-GB002384.
 XX 24-MAY-2001; 2001GB-00012687.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JW, Shone CC;
 XX WPI; 2003-167247/16.
 XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX Example 12; Page 57-60; 130pp; English.
 XX The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (Dip-HN domain) and botulinum type F neurotoxin from Clostridium
 CC botulinum. This sequence is used in the exemplification of the invention.
 CC (Updated on 23-OCT-2003 to standardise OS field)
 XX SQ Sequence 645 AA;

Query Match 100.0%; Score 2288; DB 6; Length 645;
 Best Local Similarity 100.0%; Pred. No. 4.3e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 215 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 274
 QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNYYTIIDCIRNNNSG 120
 DB 275 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNYYTIIDCIRNNNSG 334
 QY 121 WKISLNYNKKIILWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNLGSRIYING 180
 DB 335 WKISLNYNKKIILWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNLGSRIYING 394
 QY 181 NLIDEKISNLGDIHVSNDNLFKIVGCDNDRYVYRIRYKVFDTLKGTEIETLYSDPDP 240
 DB 395 NLIDEKISNLGDIHVSNDNLFKIVGCDNDRYVYRIRYKVFDTLKGTEIETLYSDPDP 454
 QY 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLVTGV 300
 DB 455 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLVTGV 514
 QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIKLIRTSNSN 360
 DB 515 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIKLIRTSNSN 574
 QY 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
 DB 575 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 634
 QY 421 FISKEHGWQEN 431
 DB 635 FISKEHGWQEN 645

RESULT 6
 AAE35693

ID AAE35693 standard; protein; 657 AA.
 XX AC AAE35693;
 XX DT 17-JUN-2003 (first entry)
 XX DE BONT/F-Hc-DipT HN domain-thrombin linker fusion construct.
 XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blephorospasm; asthma; fusion protein; diphtheria toxin;
 KW BONT/F; translocation domain; HN domain; DipT; Hc; binding domain;
 KW botulinum type F neurotoxin.
 XX KW Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Unidentified.
 OS Chimeric.
 XX PN WO200296467-A2.
 XX PD 05-DEC-2002.
 XX PF 21-MAY-2002; 2002WO-GB002384.
 XX PR 24-MAY-2001; 2001GB-00012687.
 XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX PI Sutton JM, Shone CC;
 XX WPI; 2003-167247/16.
 DR Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX Example 12; Page 60-63; 130pp; English.
 PS The invention relates to a conjugate comprising an injected bacterial
 SS effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blephorospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BONT/F-Hc) from Clostridium botulinum and thrombin linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX SQ Sequence 657 AA;
 Query Match 100.0%; Score 2288; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.5e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNKILLYPNKLYKKIKONSLDMRYENKFKIDISGYGNSINGDVIIYSTNRQF 60
 DB 227 SYTNKILLYPNKLYKKIKONSLDMRYENKFKIDISGYGNSINGDVIIYSTNRQF 286
 QY 61 GYSSKPSVNTAQNNDIYNGRYQNFSSFWVRIPKYNKVNLANNEYTIIDCIRNNSG 120

Db 287 GYSSKPSVNTAQNNDIYNGRYQNFSSFWVRIPKYNKVNLANNEYTIIDCIRNNSG 346
 QY 121 WKISLNNYKIIWTLODTAGNNOKLVFNYYTQMISISDYINKWIFVTITNNRLGNSRIYING 180
 Db 347 WKISLNNYKIIWTLODTAGNNOKLVFNYYTQMISISDYINKWIFVTITNNRLGNSRIYING 406
 QY 181 NLIDEKSI NLDGDIHVSNDNLFKIVGNCNDRYVYGRYFKVFDTELKTEIETLYSDEPDP 240
 Db 407 NLIDEKSI NLDGDIHVSNDNLFKIVGNCNDRYVYGRYFKVFDTELKTEIETLYSDEPDP 466
 QY 241 SILKDFWGNLYLVNKKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRLYTGV 300
 Db 467 SILKDFWGNLYLVNKKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRLYTGV 526
 QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIIRTSNSN 360
 Db 527 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIIRTSNSN 586
 QY 361 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
 Db 587 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 646
 QY 421 FISKEHGWQEN 431
 Db 647 FISKEHGWQEN 657
 RESULT 7
 AAE35694
 ID AAE35694 standard; protein; 657 AA.
 XX AC AAE35694;
 XX DT 17-JUN-2003 (first entry)
 XX DE BONT/F-Hc-DipT HN domain-factor Xa linker fusion construct.
 XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blephorospasm; asthma; fusion protein; diphtheria toxin;
 KW BONT/F; translocation domain; HN domain; DipT; Hc; binding domain;
 KW botulinum type F neurotoxin.
 XX KW Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Unidentified.
 OS Chimeric.
 XX PN WO200296467-A2.
 XX PD 05-DEC-2002.
 XX PF 21-MAY-2002; 2002WO-GB002384.
 XX PR 24-MAY-2001; 2001GB-00012687.
 XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX PI Sutton JM, Shone CC;
 XX WPI; 2003-167247/16.
 DR Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX Example 12; Page 63-65; 130pp; English.
 PS The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blephorospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BONT/F-Hc) from Clostridium botulinum and thrombin linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX SQ Sequence 657 AA;
 Query Match 100.0%; Score 2288; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.5e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNKILLYPNKLYKKIKONSLDMRYENKFKIDISGYGNSINGDVIIYSTNRQF 60
 DB 227 SYTNKILLYPNKLYKKIKONSLDMRYENKFKIDISGYGNSINGDVIIYSTNRQF 286
 QY 61 GYSSKPSVNTAQNNDIYNGRYQNFSSFWVRIPKYNKVNLANNEYTIIDCIRNNSG 120

CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX
 SQ Sequence 657 AA;

Query Match 100.0%; Score 2288; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.5e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 227 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 286
 QY 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDCIRNNSG 120
 DB 287 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDCIRNNSG 346
 QY 121 WKISLNYNKLIWTLDQTAGNNKLVFNVTOMISIDYINKWIFVTITNNLGSRIYING 180
 DB 347 WKISLNYNKLIWTLDQTAGNNKLVFNVTOMISIDYINKWIFVTITNNLGSRIYING 406
 QY 181 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGIRYFKVDFTELKTEIETIYSDEPDP 240
 DB 407 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGIRYFKVDFTELKTEIETIYSDEPDP 466
 QY 241 SILKDFWGNLYLLNKRYLLNLLRTDKSITQNSFNFLNINQORGYQKPNIFSNTLITGV 300
 DB 467 SILKDFWGNLYLLNKRYLLNLLRTDKSITQNSFNFLNINQORGYQKPNIFSNTLITGV 526
 QY 301 EVIIRKNGSTDISTNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 360
 DB 527 EVIIRKNGSTDISTNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 586
 QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
 DB 587 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 646
 QY 421 FISKEHGWQEN 431
 DB 647 FISKEHGWQEN 657

RESULT 8
 AA007893
 ID AA007893: standard; protein; 685 AA.
 XX
 AC AA007893;
 XX
 DT 01-NOV-2001 (first entry)
 XX
 DE Modified clostridial heavy chain-superoxide dismutase conjugate #5.
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; botulinum neurotoxin type F; BoNT/F.
 XX
 OS Geobacillus stearothermophilus.
 OS Influenza virus.
 OS Clostridium botulinum.

OS Synthetic.
 OS Chimeric.
 XX
 FN WO200159936-A2.
 XX
 PD 16-AUG-2001.
 XX
 PF 04-DEC-2000; 2000WO-GB004644.
 XX
 PR 02-DEC-1999; 99GB-00028530.
 PR 07-APR-2000; 2000GB-00008658.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 XX
 PT New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX
 PS Example 9; Page 43; 50pp; English.

CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC HC) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. the polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
 CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD) from
 CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa.
 CC translocation peptide from influenza virus and a neuronal cell-specific
 CC binding domain from botulinum neurotoxin type F (BoNT/F)

SQ Sequence 685 AA;

Query Match 100.0%; Score 2288; DB 4; Length 685;
 Best Local Similarity 100.0%; Pred. No. 4.7e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 255 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 314
 QY 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDCIRNNSG 120
 DB 315 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDCIRNNSG 374
 QY 121 WKISLNYNKLIWTLDQTAGNNKLVFNVTOMISIDYINKWIFVTITNNLGSRIYING 180
 DB 375 WKISLNYNKLIWTLDQTAGNNKLVFNVTOMISIDYINKWIFVTITNNLGSRIYING 434
 QY 181 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGIRYFKVDFTELKTEIETIYSDEPDP 240
 DB 435 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGIRYFKVDFTELKTEIETIYSDEPDP 494
 QY 241 SILKDFWGNLYLLNKRYLLNLLRTDKSITQNSFNFLNINQORGYQKPNIFSNTLITGV 300
 DB 495 SILKDFWGNLYLLNKRYLLNLLRTDKSITQNSFNFLNINQORGYQKPNIFSNTLITGV 554
 QY 301 EVIIRKNGSTDISTNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 360
 DB 555 EVIIRKNGSTDISTNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 614

Qy 361 NSLQGIIVMDSIGNNCTNFFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSGCFWS 420
 Db 615 NSLQGIIVMDSIGNNCTNFFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSGCFWS 674
 Qy 421 FISKEHGWQEN 431
 Db 675 FISKEHGWQEN 685

RESULT 9

AAE07890
 ID AAE07890 standard; protein; 862 AA.

AC AAE07890;

DT 01-NOV-2001 (first entry)

DE Modified clostridial heavy chain-superoxide dismutase conjugate #2.

KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; diphtheria neurotoxin;
 KW botulinum neurotoxin type F; BoNT/F.

OS Geobacillus stearothermophilus.
 OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Synthetic.
 OS Chimeric.

XX WO200158936-A2.

PN 16-AUG-2001.

PD 04-DEC-2000; 2000WO-GB004644.

PF 02-DEC-1999; 99GB-00028530.

PR 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

PI Shone CC, Sutton JM, Silman N;

XX WPI; 2001-514643/56.

DR New non toxic polypeptide for delivery of a therapeutic agent for the
 XX treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.

PS Example 9; Page 40; 50pp; English.

XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
 CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
 CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
 CC translocation domain from diphtheria neurotoxin and a neuronal cell-
 CC specific binding domain from botulinum neurotoxin type F (BoNT/F)

XX Sequence 862 AA;

SQ Query Match 100.0%; Score 2288; DB 4; Length 862;

Best Local Similarity 100.0%; Pred. No. 6.3e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENNFIDISGYGSNISINGDVYIYSTNRNQF 60
 Db 432 SYTNDKILILYFNKLYKKIKDINSILDMRYENNFIDISGYGSNISINGDVYIYSTNRNQF 491

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNKLNNEYYTIIDCIRNNSG 120
 Db 492 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNKLNNEYYTIIDCIRNNSG 551

Qy 121 WKISLNYNKLIIWTLODTAGNNOKLVENYQWISDSYINKWIFVTITNNRLGNSRIYING 180
 Db 552 WKISLNYNKLIIWTLODTAGNNOKLVENYQWISDSYINKWIFVTITNNRLGNSRIYING 611

Qy 181 NLIDEKISINLGDIIHVSNDILFKIVGNCNDRYVIRYFKVFDTELKTEIETLYSDEPDP 240
 Db 612 NLIDEKISINLGDIIHVSNDILFKIVGNCNDRYVIRYFKVFDTELKTEIETLYSDEPDP 671

Qy 241 SILKDFWGNLYLLNKRYYLLNLRTDKSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 300
 Db 672 SILKDFWGNLYLLNKRYYLLNLRTDKSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 731

Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVDVDVEYRLYADISIAKPEKIIKLIRTSNSN 360
 Db 732 EVIIRKNGSTDISTNDNFVRKNDLAYINVDVDVEYRLYADISIAKPEKIIKLIRTSNSN 791

Qy 361 NSLQGIIVMDSIGNNCTNFFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSGCFWS 420
 Db 792 NSLQGIIVMDSIGNNCTNFFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSGCFWS 851

Qy 421 FISKEHGWQEN 431

Db 852 FISKEHGWQEN 862

RESULT 10

AAE07892

ID AAE07892 standard; protein; 887 AA.

XX AAE07892;

AC AAE07892;

XX 01-NOV-2001 (first entry)

DT Modified clostridial heavy chain-superoxide dismutase conjugate #4.

DE Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 XX tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; diphtheria neurotoxin; human;
 KW botulinum neurotoxin type F; BoNT/F.

XX Homo sapiens.

OS Geobacillus stearothermophilus.

OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Synthetic.

OS Chimeric.

XX WO200158936-A2.

PN 16-AUG-2001.

PD 04-DEC-2000; 2000WO-GB004644.

PF 02-DEC-1999; 99GB-00028530.

PR 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

PA Shone CC, Sutton JM, Silman N;

XX WPI; 2001-514643/56.

PT New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.

XX Example 9; Page 42; 50pp; English.

XX The invention relates to a non toxic polypeptide, for delivery of a
XX therapeutic agent to a neuronal cell, which comprises a binding domain
XX (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
XX HC) that binds to the neuronal cell and a translocation domain (amino
XX terminal half of HC, designated as HN), that translocates the therapeutic
XX agent into the neuronal cell, where the translocation domain is not a HN
XX domain of a clostridial neurotoxin and is not a fragment or derivative of
XX a HN domain of a clostridial toxin. Polypeptides of the invention are
XX useful for the treatment of a disease state associated with neuronal
XX cells. The polypeptide constructs are useful for delivering therapeutic
XX substances to neuronal cells. They are useful to treat disorders of the
XX CNS including neurodegenerative diseases, stroke, epilepsy, brain tumors
XX and infection. They are also useful in gene therapy. The present sequence
XX is modified clostridial heavy chain-superoxide dismutase conjugate. This
XX conjugate comprises a mitochondrial leader sequence from human Mn-
XX superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,
XX linker that can be cleaved by thrombin, translocation domain from
XX diphtheria neurotoxin and a neuronal cell-specific binding domain from
XX botulinum neurotoxin type F (BoNT/F)

XX Sequence 887 AA;

Query Match 100.0%; Score 2288; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 6.5e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
DB 457 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 516
QY 61 GIYSSKPSSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 120
DB 517 GIYSSKPSSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 576
QY 121 WKISLNYNKIIWTLODTAGNNQKLVFNVTQMISIDYINKWIFVTITNRLGNSRIYNG 180
DB 577 WKISLNYNKIIWTLODTAGNNQKLVFNVTQMISIDYINKWIFVTITNRLGNSRIYNG 636
QY 181 NLIDEKTSISNLGDIHVSNDILFKVGCNDTRYGVIRYFKVFDTELKTEIETLYSDPD 240
DB 637 NLIDEKTSISNLGDIHVSNDILFKVGCNDTRYGVIRYFKVFDTELKTEIETLYSDPD 696
QY 241 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLINQQRGVYQKPNFNTRLTYGV 300
DB 697 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLINQQRGVYQKPNFNTRLTYGV 756
QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDVEYRLYADISAKPEKIIKLRTSN 360
DB 757 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDVEYRLYADISAKPEKIIKLRTSN 816
QY 361 NSLGGIIVMDSIGNNCTWNNFNNNGNIGLLGFTSNLNVASSWYNNIRKNTSSNGCFWS 420
DB 817 NSLGGIIVMDSIGNNCTWNNFNNNGNIGLLGFTSNLNVASSWYNNIRKNTSSNGCFWS 876
QY 421 FISKEHGWQEN 431
DB 877 FISKEHGWQEN 887

RESULT 11
AAE35713
ID AAE35713 standard; protein; 979 AA.
XX
XX AAE35713;
AC AAE35713;
XX
XX 17-JUN-2003 (first entry)
DT
XX

BoNT/F-Hc-DipT HN domain-factor Xa linker-YopT protein fusion construct.
Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
infection; prion disease; Alzheimer' disease; hypersecretion disorder;
muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
torticollis; blephorospasm; asthma; fusion protein; diphtheria toxin;
BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;
botulinum type F neurotoxin; targeted effector protein; YopT.

Corynebacterium diphtheriae.

Clostridium botulinum.

Yersinia pestis.

Unidentified.

Chimeric.

WC200296467-A2.

05-DEC-2002.

21-MAY-2002; 2002WO-GB002384.

24-MAY-2001; 2001GB-00012687.

(MICR-) MICROBIOLOGICAL RES AUTHORITY.

Sutton JM, Shone CC;

WPI; 2003-167247/16.

Conjugate for modulating cell survival and cell growth, modulating
release of inflammatory mediator from cells, comprises injected bacterial
effector protein and a carrier that targets the protein to target cell.

Example 12; Page 110-114; 130pp; English.

The invention relates to a conjugate comprising an injected bacterial
effector protein and a carrier that targets the effector protein to a
target cell. Pharmaceutical composition of the invention is useful for a
treatment selected from promoting or inhibiting survival of cells;
preventing and reversing damage to cells; killing cells; promoting or
inhibiting the growth of cells; apoptosis, release of an inflammatory
mediator from cells, division of cells and treating intracellular
infection and regulating nitric oxide release from cells. The invention
is useful in the manufacture of a medicament for treating a neuronal
cell, for intracellular infection, for interfering with intracellular
trafficking, for modulating expression of cell-surface markers and for
inhibiting secretion from cells. The invention is also useful for
treating Prion disease, Alzheimer' disease and wide range of disorders
including muscle spasms such as blephorospasm, torticollis and
hypersecretion disorders such as chronic obstructive pulmonary disease
(COPD), bronchitis and asthma. The present sequence is a fusion construct
comprising Corynebacterium diphtheriae diphtheria toxin translocation
domain (DipT-HN domain), botulinum type F neurotoxin binding domain
(BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide and
Yersinia pestis targeted effector protein YopT. This sequence is used in
the exemplification of the invention

Sequence 979 AA;

Query Match 100.0%; Score 2288; DB 6; Length 979;
Best Local Similarity 100.0%; Pred. No. 7.4e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
DB 549 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 608
QY 61 GIYSSKPSSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 120
DB 609 GIYSSKPSSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 668
QY 121 WKISLNYNKIIWTLODTAGNNQKLVFNVTQMISIDYINKWIFVTITNRLGNSRIYNG 180

669 WKISLNTYKIIWTLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYING 728
 181 NLIDEKISINLGDTHVSDNLFKIVGNDTRYGIRYKVPDTELGKTEIETLYSDRDPD 240
 729 NLIDEKISINLGDTHVSDNLFKIVGNDTRYGIRYKVPDTELGKTEIETLYSDRDPD 788
 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 300
 789 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 848
 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 360
 849 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 908
 361 NSLQGIIVMDSIGNCTMNFONNGNIGLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 420
 909 NSLQGIIVMDSIGNCTMNFONNGNIGLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 968
 421 FISKEHGWQEN 431
 969 FISKEHGWQEN 979

RESULT 12
 AA07901
 ID AA07901 standard; protein; 1032 AA.
 XX
 AC AA07901;
 XX
 DT
 XX
 XX
 DE C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 XX
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 XX Clostridium botulinum.
 XX
 XX WO200158936-A2.
 XX
 PD 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 XX
 XX 02-DEC-1999; 99GB-00028530.
 PR
 PR 07-APR-2000; 2000GB-00008658.
 XX
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA
 XX Shone CC, Sutton JM, Silman N;
 PI
 XX WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 XX treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX
 XX Example 2; Page 48; 50pp; English.
 PS
 XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence

is C. botulinum C2 enterotoxin translocation domain with botulinum
 neurotoxin type F (BoNT/F) binding domain used in the exemplification of
 the invention

Sequence 1032 AA;
 Query Match 100.0%; Score 2288; DB 4; Length 1032;
 Best Local Similarity 100.0%; Pred. No. 7,9e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

1 SYTNDKILILYFNKLYKIKDNIILDMRYENNFIDISGYGNSISINGDVYIYSTNRNQF 60
 602 SYTNDKILILYFNKLYKIKDNIILDMRYENNFIDISGYGNSISINGDVYIYSTNRNQF 661
 61 GIYSSKSEVNIAQNNDIILYNGRYQNFISIFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 120
 662 GIYSSKSEVNIAQNNDIILYNGRYQNFISIFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 721
 121 WKISLNTYKIIWTLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYING 180
 722 WKISLNTYKIIWTLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYING 781
 181 NLIDEKISINLGDTHVSDNLFKIVGNDTRYGIRYKVPDTELGKTEIETLYSDRDPD 240
 782 NLIDEKISINLGDTHVSDNLFKIVGNDTRYGIRYKVPDTELGKTEIETLYSDRDPD 841
 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 300
 842 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 901
 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 360
 902 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 961
 361 NSLQGIIVMDSIGNCTMNFONNGNIGLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 420
 962 NSLQGIIVMDSIGNCTMNFONNGNIGLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 1021
 421 FISKEHGWQEN 431
 1022 FISKEHGWQEN 1032

RESULT 13
 AA93309
 ID AA93309 standard; protein; 1059 AA.
 XX
 AC AA93309;
 XX
 DT 04-SEP-2000 (first entry)
 XX
 DE A manganese superoxide dismutase (Mn-SOD) construct.
 XX
 XX Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
 KW neuronal cell targeting component; NCTC; neuronal disease;
 KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
 KW Huntington's disease; motor neurone disease;
 KW botulinum neurotoxin serotype F.
 XX
 XX Synthetic.
 OS Geobacillus stearothermophilus.
 OS Clostridium botulinum.
 XX
 XX WO200028041-A1.
 PN
 XX 18-MAY-2000.
 PD
 XX 05-NOV-1999; 99WO-GB003699.
 PF
 XX 05-NOV-1998; 98GB-00024282.
 PR
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA
 XX

```
PI Shone CC, Sutton JM, Hallis B, Silman N;
XX WPI; 2000-376553/32.
XX
XX Novel composition, comprising superoxide dismutase linked by a cleavable
XX linker to a neuronal cell targeting component useful for delivering
XX superoxide dismutase to neuronal cells to treat ischemia.
XX
XX Disclosure; Page 48-51; 65pp; English.
XX
XX The present sequence represents a construct of the invention, comprising
XX a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
XX be cleaved by thrombin, and a heavy chain derived from botulinum
XX neurotoxin serotype F. The specification describes a composition for
XX delivery of SOD to neuronal cells. The composition comprises SOD linked,
XX by a cleavable linker, to a neuronal cell targeting component (NCTC).
XX This component has a domain that binds to a neuronal cell and a domain
XX that translocates the SOD of the composition into the neuronal cell.
XX After translocation, the linker is cleaved to release the SOD. The
XX composition is useful for treating neuronal diseases caused or augmented
XX by oxidative stress, such as ischemic stroke, trauma, Parkinson's
XX disease, Huntington's disease and motor neurone diseases
XX
XX Sequence 1059 AA;
XX
XX Query Match 100.0%; Score 2288; DB 3; Length 1059;
XX Best Local Similarity 100.0%; Pred. No. 8.2e-167;
XX Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
XX 629 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 688
XX 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 120
XX 689 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 748
XX 121 WKISLNYNKIITWTQDTAGNKKLVNTOMISIDYINKWIFVTITNRLGNSRIYING 180
XX 749 WKISLNYNKIITWTQDTAGNKKLVNTOMISIDYINKWIFVTITNRLGNSRIYING 808
XX 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKPFVDTGLKTEIETLYSDPDP 240
XX 809 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKPFVDTGLKTEIETLYSDPDP 868
XX 241 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 300
XX 869 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 928
XX 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 360
XX 929 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 988
XX 361 NSLQGIIVWDSIGNNCTWNNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFS 420
XX 989 NSLQGIIVWDSIGNNCTWNNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFS 1048
XX 421 FISKEHGWQEN 431
XX 1049 FISKEHGWQEN 1059
XX
XX RESULT 14
XX AAY93312
XX ID AAY93312 standard; protein; 1084 AA.
XX AC
XX XX AAY93312;
XX AC
XX XX 04-SEP-2000 (first entry)
XX DT
XX XX A manganese superoxide dismutase (Mn-SOD) construct.
XX DE
XX XX Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
XX KW
```

```
KW neuronal cell targeting component; NCTC; neuronal disease;
KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
KW Huntington's disease; motor neurone disease;
KW botulinum neurotoxin serotype F.
XX
XX Synthetic.
XX Homo sapiens.
XX Geobacillus stearothermophilus.
XX Clostridium botulinum.
XX
XX WO200028041-A1.
XX
XX 18-MAY-2000.
XX
XX 05-NOV-1999; 99WO-GB003699.
XX
XX 05-NOV-1998; 98GB-00024282.
XX
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX
XX Shone CC, Sutton JM, Hallis B, Silman N;
XX WPI; 2000-376553/32.
XX
XX Novel composition, comprising superoxide dismutase linked by a cleavable
XX linker to a neuronal cell targeting component useful for delivering
XX superoxide dismutase to neuronal cells to treat ischemia.
XX
XX Disclosure; Page 57-60; 65pp; English.
XX
XX The present sequence represents a construct of the invention, comprising
XX a mitochondrial leader sequence from human manganese superoxide dismutase
XX (Mn-SOD), a Bacillus stearothermophilus Mn-SOD, a linker that can be
XX cleaved by thrombin, and a heavy chain derived from botulinum neurotoxin
XX serotype F. The specification describes a composition for delivery of SOD
XX to neuronal cells. The composition comprises SOD linked, by a cleavable
XX linker, to a neuronal cell targeting component (NCTC). This component has
XX a domain that binds to a neuronal cell and a domain that translocates the
XX SOD of the composition into the neuronal cell. After translocation, the
XX linker is cleaved to release the SOD. The composition is useful for
XX treating neuronal diseases caused or augmented by oxidative stress, such
XX as ischemic stroke, trauma, Parkinson's disease, Huntington's disease and
XX motor neurone diseases
XX
XX Sequence 1084 AA;
XX
XX Query Match 100.0%; Score 2288; DB 3; Length 1084;
XX Best Local Similarity 100.0%; Pred. No. 8.4e-167;
XX Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
XX 654 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 713
XX 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 120
XX 714 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 773
XX 121 WKISLNYNKIITWTQDTAGNKKLVNTOMISIDYINKWIFVTITNRLGNSRIYING 180
XX 774 WKISLNYNKIITWTQDTAGNKKLVNTOMISIDYINKWIFVTITNRLGNSRIYING 833
XX 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKPFVDTGLKTEIETLYSDPDP 240
XX 834 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGVIRYKPFVDTGLKTEIETLYSDPDP 893
XX 241 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 300
XX 894 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 953
XX 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 360
XX 954 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 1013
```

Qy 361 NSLQIIIVDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 420
Db 1014 NSLQIIIVDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 1073

Qy 421 FISKEHGWQEN 431
Db 1074 FISKEHGWQEN 1084

RESULT 15

AAE07900

ID AAE07900 standard; protein; 1092 AA.

XX

AC AAE07900;

XX 01-NOV-2001 (first entry)

XX C. botulinum C2 translocation domain with BoNT/F-binding domain #1.

XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy;
KW botulinum neurotoxin type F; BoNT/F.XX Clostridium botulinum.
OS WO200158936-A2.

XX

XX 16-AUG-2001.

XX 04-DEC-2000; 2000WO-GB004644.

XX 02-DEC-1999; 99GB-00028530.

XX 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Shone CC, Sutton JM, Silman N;

XX WPI; 2001-514643/56.

XX New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.

XX Example 2; Page 47; 50pp; English.

XX The invention relates to a non toxic polypeptide, for delivery of a
XX therapeutic agent to a neuronal cell, which comprises a binding domain
XX (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
XX Hc) that binds to the neuronal cell and a translocation domain (amino
XX terminal half of HC, designated as HN), that translocates the therapeutic
XX agent into the neuronal cell, where the translocation domain is not a HN
XX domain of a clostridial neurotoxin and is not a fragment or derivative of
XX a HN domain of a clostridial toxin. Polypeptides of the invention are
XX useful for the treatment of a disease state associated with neuronal
XX cells. The polypeptide constructs are useful for delivering therapeutic
XX substances to neuronal cells. They are useful to treat disorders of the
XX CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
XX and infection. They are also useful in gene therapy. The present sequence
XX is C. botulinum C2 enterotoxin translocation domain with botulinum
XX neurotoxin type F (BoNT/F) binding domain used in the exemplification of
XX the invention

SQ Sequence 1092 AA;

Query Match 100.0%; Score 2288; DB 4; Length 1092;

Best Local Similarity 100.0%; Pred. No. 8.5e-167; Mismatches 0; Indels 0; Gaps 0;
Matches 431; Conservative 0;

Qy 1 SYTNDKILLYFNKLYKKIDNMDRYENKFDISGYSNISINGVDVIYSTNRNQF 60
Db 662 SYTNDKILLYFNKLYKKIDNMDRYENKFDISGYSNISINGVDVIYSTNRNQF 721

Qy 61 GIYSKSEVNIQAQNDIIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIDCIRNNNSG 120
Db 722 GIYSKSEVNIQAQNDIIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIDCIRNNNSG 781
Qy 121 WKISLNYNKIIWTLODTAGNNOQLVFNNTOMISISDYINKWIFVTITNNLGNRIYING 180
Db 782 WKISLNYNKIIWTLODTAGNNOQLVFNNTOMISISDYINKWIFVTITNNLGNRIYING 841
Qy 181 NLIDEXSISNLGDIHVSNDNLFKIVGCDNTRYGVIRYFKVFDTELKTEIETLYSDEPDP 240
Db 842 NLIDEXSISNLGDIHVSNDNLFKIVGCDNTRYGVIRYFKVFDTELKTEIETLYSDEPDP 901
Qy 241 SILKDFWNGYLLYNKRYLLNLLRTDKSITQNSNFLNINQORGVYQKPNFNTRLYTGV 300
Db 902 SILKDFWNGYLLYNKRYLLNLLRTDKSITQNSNFLNINQORGVYQKPNFNTRLYTGV 961
Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVDVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 962 EVIIRKNGSTDISTNDNFVRKNDLAYINVDVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 1021
Qy 361 NSLQIIIVDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 420
Db 1022 NSLQIIIVDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 1081
Qy 421 FISKEHGWQEN 431
Db 1082 FISKEHGWQEN 1092

Search completed: March 2, 2006, 00:38:55
Job time : 209.5 secs

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QY 298 TGVEVIIRKNGSTDISNTDNFVRKNDL

Db 1009 GNLIDQKSLNLGNHVSNDILPKIVMCYSYTRYIGIRYFNIFDKELDETEIQTLYSNEPN 1068

Qy 240 PSILKDFWGNLYLNKRYLLNLRRTDKSI-TQNSFNINQORGVYQKNIPTNRLYT 298

Db 1069 TNLKDFWGNLYLDKEYLLNVLKPNFIDRRKDSLTSLNIRS-----TILLANRLYS 1123

Qy 299 GVEVIIRK--NGSTDISNTDNFVRKNDLAYIN-VVDRDVEYRLVADISIAKPEKIIKLIR 355

Db 1124 GIKVKIQRVNNSSTN-----DNLVRKNDQVYINFAVSKTHLLPLADYATTNKTKTKIKI-- 1177

Qy 356 TSNSNLSGQIIVVDSISGNCTMNFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSN 415

Db 1178 -SSGGRNFQVNVNVSNGNCTMNFQNNNGNIGLGFKADTVVASTWYTYTHMRDHTNSN 1236

Qy 416 GCFWFSFISKEHGWOE 430

Db 1237 GCFWNFISEEHGWOE 1251

RESULT 4

JH0256

botulinum neurotoxin type B precursor - Clostridium butyricum

C:Species: Clostridium butyricum

C:Date: 30-Jun-1992 #sequence_revision 15-May-1998 #text_change 09-Jul-2004

C:Accession: JH0256; S16145

R:Poulet, S.; Hauser, D.; Quanz, M.; Niemann, H.; Popoff, M.R.

Biochem. Biophys. Res. Commun. 183, 107-113, 1992

A:Title: Sequences of the botulinum neurotoxin E derived from Clostridium botulinum type A

A:Reference number: JH0256; MUID:92181428; PMID:1543481

A:Accession: JH0256

A:Status: nucleic acid sequence not shown

A:Molecule type: DNA

A:Residues: 1-27, 'E', 29-1251 <POU>

A:Cross-references: UNIPROT:P30995; UNIPARC:UPI000017670D; EMBL:X62088; NID:940379

A:Experimental source: strains ATCC 43181 and ATCC 43755

R:Fujii, N.; Kimura, K.; Yashiki, T.; Indoh, T.; Murakami, T.; Tsuzuki, K.; Yokosawa, N.

J. Gen. Microbiol. 137, 519-525, 1991

A:Title: Cloning of a DNA fragment encoding the 5'-terminus of the botulinum type E toxin

A:Reference number: S16145; MUID:91237316; PMID:2033376

A:Accession: S16145

A:Status: preliminary

A:Molecule type: DNA

A:Residues: 1-229, 'M', 231-252 <FUJ>

A:Cross-references: UNIPARC:UPI000016EA8F; EMBL:X53180; NID:940407; PIDN:CAA37321.1; PID

A:Experimental source: strain BLE340

C:Comment: The clostridial neurotoxins are toxins that inhibit neurotransmitter release

C:Superfamily: tetanus toxin

C:Keywords: neurotoxin

P:2-422/Product: botulinum neurotoxin type E light chain #status predicted <LIG>

P:423-1251/Product: botulinum neurotoxin type E heavy chain #status predicted <HEA>

P:412-426/Disulfide bonds: #status predicted

Query Match 62.3%; Score 1426; DB 2; Length 1251;

Best Local Similarity 62.8%; Pred. No 2e-74;

Matches 273; Conservative 73; Mismatches 71; Indels 18; Gaps 8;

Qy 1 SYTDKILLYFNKLYKIKDINSILDMRYENKKNFIDISGYSNISINGDVYIYSTNRQF 60

Db 829 SYTDKILLYFNKLYKIKDINSILDMRYENKKNFIDISGYSNISINGDVYIYSTNRQF 888

Qy 61 GYSSKPSFENVAQNNDIYNGRYQNFISFWVRIPKPYNK-VNLNNEYTIIDICIRNNS 119

Db 889 GYNDKLSVNTISQNDYIIYDKYKFNFSFWVRIPKPYNKVNVNNEYTIIDICIRNNS 948

Qy 120 GWKISLVNKKIITWLDOTAGNOKLVFNVTQMSISDYNNKLVFTVITNNRNLGSIYIN 179

Db 949 GWKISLVNKKIITWLDOTAGNOKLVFNVTQMSISDYNNKLVFTVITNNRNLGSIYIN 1008

Qy 180 GNLIDKXSLNLGNHVSNDILPKIVMCYSYTRYIGIRYFNIFDKELDETEIQTLYSDEPD 239

Db 1009 GNLIDKXSLNLGNHVSNDILPKIVMCYSYTRYIGIRYFNIFDKELDETEIQTLYSNEPN 1068

Qy 240 PSILKDFWGNLYLNKRYLLNLRRTDKSTQNS-NFLNINQORGVYQKNIPTNRLYT 298

Db 1069 ANILKDFWGNLYLDKEYLLNVLKPNFIRRTDSTLSINNIRS-----TILLANRLYS 1123

Qy 299 GVEVIIRK--NGSTDISNTDNFVRKNDLAYIN-VVDRDVEYRLVADISIAKPEKIIKLIR 355

Db 1124 GIKVKIQRVNNSSTN-----DNLVRKNDQVYINFAVSKTHLLPLADYATTNKTKTKIKI-- 1177

Qy 356 TSNSNLSGQIIVVDSISGNCTMNFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSN 415

Db 1178 -SSGGRNFQVNVNVSNGNCTMNFQNNNGNIGLGFKADTVVASTWYTYTHMRDNTNSN 1235

Qy 416 GCFWFSFISKEHGWOE 430

Db 1236 GCFWNFISEEHGWOE 1250

RESULT 5

BTCLAB

botoxylisin (EC 3.4.24.69) A precursor - Clostridium botulinum

N:Alternate names: botulinum neurotoxin type A

C:Species: Clostridium botulinum

C:Date: 31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change 09-Jul-2004

C:Accession: A35294; S09492; S68220; A33401; A53884; A60025; A27000

R:Binz, T.; Kurazono, H.; Wille, M.; Frevert, J.; Wernars, K.; Niemann, H.

J. Biol. Chem. 265, 9153-9158, 1990

A:Title: The complete sequence of botulinum neurotoxin type A and comparison with other

A:Reference number: A35294; MUID:90264400; PMID:2160960

A:Accession: A35294

A:Molecule type: DNA

A:Residues: 1-1296 <BIN>

A:Cross-references: UNIPROT:P10845; UNIPARC:UPI0000001386; GB:M30196; NID:G144864; PIDN:

A:Experimental source: strain 62A, subtype A

R:Thompson, D.E.; Brehm, J.K.; Gulttram, J.D.; Swinfield, T.J.; Shone, C.C.; Atkinson, T.

Eur. J. Biochem. 189, 73-81, 1990

A:Title: The complete amino acid sequence of the Clostridium botulinum type A neurotoxin

A:Reference number: S09492; MUID:90235864; PMID:2185020

A:Accession: S09492

A:Molecule type: DNA

A:Residues: 1, 'Q', 3-26, 'V', 28-1296 <THO>

A:Cross-references: UNIPARC:UPI000003409D; EMBL:X52066; NID:G40381; PIDN:CAA36289.1; PID

R:Fujita, R.; Fujinaga, Y.; Inoue, K.; Nakajima, H.; Kumon, H.; Oguma, K.

PBS Lett. 376, 41-44, 1995

A:Title: Molecular characterization of two forms of nontoxic-nonhemagglutinin components

A:Reference number: S67988; MUID:96096783; PMID:8521962

A:Accession: S68220

A:Status: preliminary

A:Molecule type: DNA

A:Residues: 1-12 <FUJ>

A:Cross-references: UNIPARC:UPI0000173655; EMBL:D67030; DDBJ:D50421; NID:G2160224

R:Beckley, M.J.; Somers, E.; Dasgupta, B.R.

Biochem. Biophys. Res. Commun. 162, 1388-1395, 1989

A:Title: Characterization of botulinum type A neurotoxin gene: delineation of the N-term

A:Reference number: A33401; MUID:89350959; PMID:2669749

A:Accession: A33401

A:Molecule type: DNA

A:Residues: 1-35 <BET>

A:Cross-references: UNIPARC:UPI000016EA84; GB:M27892; NID:G144880; PIDN:AAA23269.1; PID

R:Gimenez, J.A.; Dasgupta, B.R.

J. Protein Chem. 12, 351-363, 1993

A:Title: Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72, 45, 42, an

A:Reference number: A53884; MUID:94000342; PMID:8397793

A:Accession: A53884

A:Status: preliminary

A:Molecule type: protein

A:Residues: 867-880; 1148-1217, 'Y', 1219 <GIM>

A:Cross-references: UNIPARC:UPI00000BBB24; UNIPARC:UPI0000173656

A:Experimental source: strain Hall

A:Note: sequence extracted from NCBI backbone (NCBI:139159); sequence modified after ex

R:Dasgupta, B.R.; Dekleva, M.L.

Biochimie 72, 661-664, 1990

A:Title: Botulinum neurotoxin type A: sequence of amino acids at the N-terminus and aro

A;Reference number: A60025; MUID:91120847; PMID:2126206
A;Accession: A60025
A;Molecule type: protein
A;Residues: 2-6;445-453,'X',455-457 <DAS1>
A;Cross-references: UNIPARC:UPI0000173657; UNIPARC:UPI0000173658
R;DasGupta, B.R.; Foley, J.; Niece, R.
Biochemistry 26, 4162, 1987
A;Title: Partial sequence of the light chain of botulinum neurotoxin type A.
A;Reference number: A27000
A;Accession: A27000
A;Molecule type: protein
A;Residues: 2-47 <DAS2>
A;Cross-references: UNIPARC:UPI0000173659
R;Binz, T.; Blas, J.; Kamasaki, S.; Baumeister, A.; Link, E.; Suedhof, T.C.; Jahn, R.;
J. Biol. Chem. 269, 1617-1620, 1994
A;Title: Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.
A;Reference number: A49708; MUID:94124495; PMID:8294407
A;Contents: annotation
C;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap
C;Genetics:
A;Gene: atx; botA
C;Function:
A;Description: catalyzes hydrolysis of an Asn-Arg peptide bond in synaptosomal-associated
C;Superfamily: tetanus toxin
C;Keywords: disulfide bond; hydrolase; metalloproteinase; neurotoxin; transmembrane prot
F;2-444/Product: bontoxilysin A light chain #status experimental <LGHT>
F;445-1296/Product: bontoxilysin A heavy chain #status experimental <HVI>
F;223/227/Binding site: zinc (His) #status predicted
F;224/Active site: Glu #status predicted

Query Match 49.0%; Score 1120.5; DB 1; Length 1296;
Best Local Similarity 49.4%; Pred. No. 7.8e-57; Indels 19; Gaps 7;
Matches 219; Conservative 127; Mismatches 127;
Qy 2 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYSNIGSINGDVYIYSTRNQFG 61
Db 856 YVDNQLLSTFTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
Qy 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRPKYFNKVNLNNEYTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNSMYENFSTFWIRPKYFNKVNLNNEYTIIDCIRNNNSGW 974
Qy 122 KISLNKNIITLQDTAGNNKLVFNNTQMSISDYINKWIFVTITNNLGNRIYINGN 181
Db 975 KVSNLNGEIIWTLQDNKQNIQVVFYKYSQWALSDYINWIFVTITNNLTKSKIYINGR 1034
Qy 182 LIDKESISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFTELKTEIETLYSDEPDP 240
Db 1035 LIDQKPISNLGNHASNIMFKLDGCRDTHRYIWKYFNLPFDKELNEKEIKDLYDNQNS 1094
Qy 241 SILKDFWGNLYLKNRYVLLNLRDTSITONS----NFLNINQORGVYQKPIFSNTRL 296
Db 1095 GILKDFWGNLYLQDKPYMLNLDPNKYVDVNNIGRGMVILKGRGVSMTTNIYLSNL 1154
Qy 297 YTGVEIIRKNGSTDISNTDFVRKNDLAYINVDVDRVEYRLYADISIAKEPIIKLIRT 356
Db 1155 YRGTKFIKKYAS---GNKDNIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 1211
Qy 357 SNSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407
Db 1212 PDVGN-LSQVVMKSKDQGITNCKMNLQDNGNDIGFIFGHFLYDNIKLAVASNWYNNRQ 1270
Qy 408 IRKNTSSNGCWFSGFISKEHGQWE 430
Db 1271 IERSRSLTGCSEWFIPVDDGWGE 1293

RESULT 6
I40645
botulinum neurotoxin type A - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004
C;Accession: I40645

R;Willems, A.; East, A.K.; Lawson, P.A.; Collins, M.D.

Res. Microbiol. 144, 547-556, 1993
A;Title: Sequence of the gene coding for the neurotoxin of Clostridium botulinum type A
A;Reference number: I40645; MUID:94143603; PMID:8310180
A;Accession: I40645
A;Status: preliminary; translated from GB/EMBL/DBJ
A;Molecule type: DNA
A;Residues: 1-1296 <RES>
A;Cross-references: UNIPROT:Q45894; UNIPARC:UPI000016EA88; EMBL:X73423; NID:g507070; PII
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 47.7%; Score 1092.5; DB 2; Length 1296;
Best Local Similarity 48.6%; Pred. No. 3.2e-55;
Matches 216; Conservative 76; Mismatches 133; Indels 19; Gaps 7;
Qy 2 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYSNIGSINGDVYIYSTRNQFG 61
Db 856 YVDNQLLSTFTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
Qy 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRPKYFNKVNLNNEYTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNSMYENFSTFWIRPKYFNKVNLNNEYTIIDCIRNNNSGW 974
Qy 122 KISLNKNIITLQDTAGNNKLVFNNTQMSISDYINKWIFVTITNNLGNRIYINGN 181
Db 975 KVSNLNGEIIWTLQDNKQNIQVVFYKYSQWALSDYINWIFVTITNNLTKSKIYINGR 1034
Qy 182 LIDKESISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFTELKTEIETLYSDEPDP 240
Db 1035 LIDQKPISNLGNHASNIMFKLDGCRDTHRYIWKYFNLPFDKELNEKEIKDLYDNQNS 1094
Qy 241 SILKDFWGNLYLKNRYVLLNLRDTSITONS----NFLNINQORGVYQKPIFSNTRL 296
Db 1095 GILKDFWGNLYLQDKPYMLNLDPNKYVDVNNIGRGMVILKGRGVSMTTNIYLSNL 1154
Qy 297 YTGVEIIRKNGSTDISNTDFVRKNDLAYINVDVDRVEYRLYADISIAKEPIIKLIRT 356
Db 1155 YRGTKFIKKYAS---GNKDNIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 1211
Qy 357 SNSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407
Db 1212 PDVGN-LSQVVMKSKDQGITNCKMNLQDNGNDIGFIFGHFLYDNIKLAVASNWYNNRQ 1270
Qy 408 IRKNTSSNGCWFSGFISKEHGQWE 431
Db 1271 VGRASRTFGCSWEFIPVDDGWGES 1294

RESULT 7
S48110
neurotoxin type F - Clostridium botulinum (fragment)
C;Species: Clostridium botulinum
C;Date: 14-Jul-1995 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific i
A;Reference number: S48103; MUID:94013372; PMID:8408542
A;Accession: S48110
A;Status: preliminary; translation not shown
A;Molecule type: DNA
A;Residues: 1-366 <CAM>
A;Cross-references: UNIPROT:Q57236; UNIPARC:UPI000016EA7C; EMBL:X70821; NID:g407792; PII
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 35.7%; Score 816; DB 2; Length 366;
Best Local Similarity 100.0%; Pred. No. 5.3e-40;
Matches 153; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 SYTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYSNIGSINGDVYIYSTRNQFG 60

Db 214 SYTNDKILLYFKYKKIKDINSILDMRYENNKFDISGYNSISNGVDVYIYSTRNQF 273
Qy 61 GIYSKSEVNIAQNNDIYNGRYONFSISFWWIPKPYFNKVNLANNEVTIIDCIRNNNSG 120
Db 274 GIYSKSEVNIAQNNDIYNGRYONFSISFWWIPKPYFNKVNLANNEVTIIDCIRNNNSG 333
Qy 121 WKISLNTYKIIWTIQTADAGNOKLVFNFTOMIS 153
Db 334 WKISLNTYKIIWTIQTADAGNOKLVFNFTOMIS 366
RESULT 8
140631
non-proteolytic botulinum neurotoxin type B precursor - Clostridium botulinum
C:Species: Clostridium botulinum
C:Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004
R:Hutson, R.A.; Collins, M.D.; East, A.K.; Thompson, D.E.
Curr. Microbiol. 28, 101-110, 1994
A:Title: Nucleotide sequence of the gene coding for non-proteolytic Clostridium botulinum
A:Reference number: 140631; MUID:94122659; PMID:7764370
A:Accession: 140631
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: DNA
A:Residues: 1-1291 <RES>
A:Cross-references: UNIPROT:008077; UNIPARC:UPI00000BDC86; EMBL:X71343; NID:G296148; PID
R:Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A:Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
A:Reference number: S48103; MUID:94013372; PMID:8408542
A:Accession: S48103
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 634-761, 'B', 763-841, 'M', 843, 'T', 845, 'N', 847-994 <CAM>
A:Cross-references: UNIPARC:UPI00000BEAF; EMBL:X70814; NID:G407778; PIDN:CAAS0145.1; PI
A:Experimental source: non-proteolytic strain 2129B (Scott)
A:Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993
A:Accession: S48104
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 634-843, 'T', 845, 'N', 847-994 <CAM2>
A:Cross-references: UNIPARC:UPI00000B7A6E; EMBL:X70819; NID:G407780; PIDN:CAAS0150.1; PI
A:Experimental source: non-proteolytic strain Eklund 2B (Colworth 229)
C:Comment: Botulinum neurotoxin type B in these strains may possess a capable catalytic s
C:Genetics:
A:Gene: bont/b
C:Superfamily: tetanus toxin
C:Keywords: metalloprotein; neurotoxin; transmembrane protein; zinc
F:2-441/Product: botulinum neurotoxin type B light chain #status predicted <LGHT>
F:442-1291/Product: botulinum neurotoxin type B heavy chain #status predicted <HVT>
F:230,234/Binding site: zinc (His) #status predicted
F:231/Active site: Glu #status predicted
Query Match 34.1%; Score 781; DB 2; Length 1291;
Best Local Similarity 37.0%; Pred. No. 2,5e-37;
Matches 174; Conservative 90; Mismatches 146; Indels 60; Gaps 14;
Qy 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENNKFDISGYNSISNGVDVYIYSTRNQF 60
Db 842 TYSNTEILIKIFNKYNSLNNILNRYDRNNDLSCYGAKVEVDGKVL--NDKXNQF 899
Qy 61 GIYSKSEVNIAQNNDIYNGRYONFSISFWWIPKPYFNKVNLANNEVTIIDCIRNN 117
Db 900 KLTSSADSKIRVTQNIQNFISNMFDFSFVIRPKYRNDIQNIYHNEYITLNCMK-N 958
Qy 118 NSGKISLNNKIIWTIQTADAGNOKLVFNFTOMISISDYINKWIFVTITNNLNSRIY 177
Db 959 NSGKISLNNKIIWTIQTADAGNOKLVFNFTOMISISDYINKWIFVTITNNLNSRIY 1017
Qy 178 INGNLDEKISNGLDIHSDNLFKIVGCND-TRYVGRYKPYFDTTELKTEITFLYSD 236
Db 1018 INGTLESNDIKDIGEVNIGBITFKDLGDVDRTPQIMWKYSIFNTQLNQSNKIEIYKI 1077

Qy 237 EPPDSILKDFWGNLYLYNKKYLLNL-----LRTDKSI-----TQNSNFNLIN 279
Db 1078 QSYSEYKDFWGNPLMYKNKYMFNAGNKNYSIKLVKDSVSGEILIRSKYNQNSNYINR 1137
Qy 280 QQRGVYQKPNIFNTRLYTGVEVLIIRKNGSTDLSNTDNFVRKNDLAVINNVDRDVEYRL 339
Db 1138 -----NLYIGEKFIIRRESNSQSIN-DDIVRKEDYIHLDLVLHHEHRVY 1181
Qy 340 ADISIAKPEKIIKIRTSNNSLSGLIIVM---DSIGNNCTMNFQNN--NGSIGLLGFFH 394
Db 1182 AYKYFKEQEKIPLSIISDSNEFYKTEIKYEDEQSPYSQQLPFKDEESTDDIGLIGIH 1241
Qy 395 -----SNNLVASSWYNNI--RNTSSN-GCFWFSFISKEHGOE 430
Db 1242 RFYESGVLRRKKYKDYFCISKWYLKVRKPKYKSNLGCNWFQIPKDEGWTE 1291
RESULT 9
A48940
bontoxilysin (EC 3.4.24.69) B precursor - Clostridium botulinum
N:Alternate names: botulinum neurotoxin type B (BoNT/B)
C:Species: Clostridium botulinum
C:Date: 19-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 09-Jul-2004
R:Whelan, S.M.; Elmore, M.J.; Bodsworth, N.J.; Brehm, J.K.; Atkinson, T.; Minton, N.P.
Appl. Environ. Microbiol. 58, 2345-2354, 1992
A:Title: Molecular cloning of the Clostridium botulinum structural gene encoding the type
A:Reference number: A48940; MUID:92384550; PMID:1514783
A:Accession: A48940
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-1291 <WHE>
A:Cross-references: UNIPROT:P10844; UNIPARC:UPI000016EA76; GB:M81186; NID:G144734; PIDN:
A:Experimental source: type B, Danish
A:Note: sequence extracted from NCBI backbone (NCBIN:112080, NCBI:P:112081); this publica
R:Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A:Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
A:Reference number: S48103; MUID:94013372; PMID:8408542
A:Accession: S48105
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 634-994 <CAM>
A:Cross-references: UNIPARC:UPI000016EA7A; EMBL:X70817; NID:G407782; PIDN:CAAS0148.1; PI
A:Experimental source: proteolytic type B, strain NCTC 7273
R:Szabo, E.A.; Pemberton, J.M.; Desmarchelier, P.M.
submitted to the EMBL Data Library, April 1992
A:Description: Partial amino acid sequence of botulinum neurotoxin type B and compariso
A:Reference number: S21575
A:Accession: S21575
A:Molecule type: DNA
A:Residues: 36-217, 'G', 219-224, 'S', 226-246 <SZA>
A:Cross-references: UNIPARC:UPI000016EA79; EMBL:Z11934; NID:G40383; PIDN:CAA77991.1; PID
R:Kurazono, H.; Mochida, S.; Binz, T.; Eisel, U.; Quanz, M.; Grebenstein, O.; Wernars, K.
J. Biol. Chem. 267, 14721-14729, 1992
A:Title: Minimal essential domains specifying toxicity of the light chains of tetanus to
A:Reference number: A42871; MUID:92340509; PMID:1634516
A:Accession: A42871
A:Status: nucleic acid sequence not shown
A:Molecule type: mRNA
A:Residues: 1-313, 'S', 315-451 <KUR>
A:Cross-references: UNIPARC:UPI000000B3742
A:Experimental source: strain Okra
A:Note: sequence extracted from NCBI backbone (NCBI:P:109365)
R:Daegupta, B.R.; Datta, A.
Biochimie 70, 811-817, 1988
A:Title: Botulinum neurotoxin type B (strain 657): partial sequence and similarity with
A:Reference number: S07155; MUID:89000987; PMID:3139097
A:Accession: S07155
A:Molecule type: protein
A:Residues: 2-29, 'M', 31-45 <DAS>
A:Cross-references: UNIPARC:UPI00000173650
A:Accession: S08562

A;Molecule type: protein
A;Residues: 442-463, R', 465-467 <DA2>
A;Cross-references: UNIPARC:UPI0000173650
R;Schmidt, J.J.; Sathyanarayanan, V.; DasGupta, B.R.
Arch. Biochem. Biophys. 238, 544-548, 1985
A;Title: Partial amino acid sequences of botulinum neurotoxins types B and E.
A;Reference number: S07128; MUID:95197963; PMID:3888113
A;Accession: S07128
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-16 <SCH1>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08573
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-17 <SCH2>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08574
A;Status: preliminary
A;Molecule type: protein
A;Residues: 442-459 <SCH3>
A;Cross-references: UNIPARC:UPI0000173652
R;Schiaivo, G.; Benfenati, F.; Poulain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A;Reference number: S27125; MUID:93063293; PMID:1331807
A;Contents: annotation
C;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap
C;Genetics:
A;Gene: bont/b
C;Function:
A;Description: catalyzes hydrolysis of a Gln-Phe peptide bond in synaptobrevin 2
C;Superfamily: tetanus toxin
C;Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc
F;2-441/Product: bontoxilysin B light chain #status experimental <LIGHT>
F;442-1291/Product: bontoxilysin B heavy chain #status experimental <HVY>
F;230,234/Binding site: zinc (His) #status predicted
F;231/Active site: Glu #status predicted

Query Match 33.6%; Score 769; DB 1; Length 1291;
Best Local Similarity 36.0%; Pred. No. 1.2e-36;
Matches 169; Conservative 88; Mismatches 152; Indels 60; Gaps 13;

Qy 2 YTNDDKILLYFNKLYKKIKDMSILDMRYENKFFIDISGYSGNISINGDVVYIYSTNRNQFG 61
Db 843 YTNDDKILLYFNKLYKKIKDMSILDMRYENKFFIDISGYSGNISINGDVVYIYSTNRNQFG 61

Qy 62 IYSSKPSVNTAQNNDIYNGRYQNFISFVWRIPKYPN---KVNLANEYTIIDCIRNN 118
Db 901 LTSSANSKIRVTQNIIFNSVFLDFSVFWRIPKYNQDQIQNYIHNEYTIINCMK-NN 959

Qy 119 SGWKISLNNYKIWTLODTAGNKKLVNFTQMSISDYINKWIFVTITNRLGNSRIYI 178
Db 960 SGWKISIRGNRIIWTLDINGKTSVFPYENIREDISYINRWPFVITNN-LNNAKIYI 1018

Qy 179 NGNLIDEKSIENLGDHVSNDILFKIVGCD-TRVVGIRYKVPDTGLGTEIETLYSDE 237
Db 1019 NGKLESNTDIKDREVIANGELIIFKLDGIDRTQFIMWKYSIFNTELSQNSIERVKIQ 1078

Qy 238 PDPSILKDPWGNLYLLNRYKRYLLN-----LRTDKSI-----TQNSNPLNIQ 280
Db 1079 SYSEYLDKDPWGNPLMYNKYWFNAGNKNYIKLKDPSVGEILLTRSKYNQSKYINVRD 1138

Qy 281 QRGVYQKPNIFSTRLTYTGEVIRKNGSTDISNTDNFVRKNDLAYINVDVDRDVEYRLYA 340
Db 1139 -----LYTGEKFIIRKNSQSIN-DDIVRKEDYIYLDFFNLNQEWRVYT 1182

Qy 341 DISTAKPEKIIKLTSTNNSLGOIIVM---DSIGNNCTNWFQNN---NGGNIGLGLPH- 394
Db 1183 YKFKKEEKEKFLAPISDSFYNTIQIKEDYEQPTYSQQLLFKDEESTDEIGLIGHR 1242

Qy 395 -----SNNLVAGSWYNNIRKN--TSSNGCFWSFISKEHGWQE 430

Db 1243 FYESGIVFBEYKDYFCISKWYLKVKRPFYNLKLGCNMQFIPKDEGWTE 1291

RESULT 10
S39791
neurotoxin - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 07-Oct-1994 #sequence_revision 01-Dec-1995 #text_change 16-Jul-1999
C;Accession: S39791
R;Campbell, K.; Collins, M.D.; East, A.K.
Biochim. Biophys. Acta 1216, 487-491, 1993
A;Title: Nucleotide sequence of the gene coding for Clostridium botulinum (Clostridium a
A;Reference number: S39791; MUID:94092745; PMID:8268233
A;Accession: S39791
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1297 <CAM>
A;Cross-references: UNIPARC:UPI0000176706; EMBL:X74162; NID:9441275; PIDN:CAAS2275.1; P
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 32.2%; Score 736.5; DB 2; Length 1297;
Best Local Similarity 35.7%; Pred. No. 9.2e-35;
Matches 164; Conservative 76; Mismatches 179; Indels 41; Gaps 10;

Qy 2 YTNDDKILLYFNKLYKKIKDMSILDMRYENKFFIDISGYSGNISINGDVVYIYSTNRNQFG 61
Db 848 YTNDDKILLYFNKLYKKIKDMSILDMRYENKFFIDISGYSGNISINGDVVYIYSTNRNQFG 61

Qy 62 IYSSKPSVNTAQNNDIYNGRYQNFISFVWRIPKYPN---KVNLANEYTIIDCIRNN 118
Db 908 LNNSENSNITAHQSKFVYDMSFDFNSFVWRIPKYNNDIQTLYQNEYTIISCIK-ND 966

Qy 119 SGWKISLNNYKIWTLODTAGNKKLVNFTQMSISDYINKWIFVTITNRLGNSRIYI 178
Db 967 SGWKISIRGNRIIWTLDVNAKSKSIFFEYSIKDMSIDYINKWFSITITNDRIGNANIYI 1026

Qy 179 NGNLIDEKSIENLGDHVSNDILFKIVGCD-TRVVGIRYKVPDTGLGTEIETLYSDE 237
Db 1027 NGSLKSEKILNLDNRNSSNDIDFKLINCITDTTFKFWIKDFNIFGRELNATEVSSLYWQ 1086

Qy 238 PDPSILKDPWGNLYLLNRYKRYLLN-----LRTDKSITQNSNPLNIQOQGVYQKPN 289
Db 1087 SSTNLKDPWGNLRYDQTYLFGNQGMNIYIKYFSKASMGETAPRTNFNNAIYQ--- 1143

Qy 290 IFNTRLYTGEVIRKNGSTDISNTDNFVRKNDLAYINVDVDRDVEYRLYADISIAPKE 348
Db 1144 -----NLYLGLRFLIIRKASNSRNINNDNIVREGDYIYLNIDNISDESIRVYVLVN-SKEI 1197

Qy 349 KIIKLIKRTSNNSLGOIIVMDSIGNNCTNWFQ---NNNGGNIGLLGF----- 393
Db 1198 QTQLFLAPINDPDTFYDVLQIKKYEKTYTNCQILCEKDTKTFGLFGIGKFKVDYGYVMD 1257

Qy 394 -HSNNLVAGSWYNNIRKN--TSSNGCFWSFISKEHGWQE 430
Db 1258 TYDNYFCISQWYLRRISINLRLGNCNMQFIPVDEGWTE 1297

RESULT 11
S48109
neurotoxin type F - Clostridium botulinum (fragment)
C;Species: Clostridium botulinum
C;Date: 12-Feb-1998 #sequence_revision 20-Feb-1998 #text_change 09-Jul-2004
C;Accession: S48109
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A;Title: Gene probes for identification of the botulin neurotoxin gene and specific i
A;Reference number: S48103; MUID:94013372; PMID:8408542
A;Accession: S48109
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA
A;Residues: 1-369 <CAM>
A;Cross-references: UNIPROT:P30996; UNIPARC:UPI000016A7B; EMBL:X70820; NID:9407790; PI

A:Residues: 1-1276 <BIN>
A:Cross-references: UNIPROT:P19321; UNIPARC:UPI0000126B83; EMBL:X54254; NID:94444
C:Superfamily: tetanus toxin

A; cross-references: UNIPARC:0910000156CFA; GB:M12/39; NID:9144920
A; Accession: B25194
A; Molecule type: protein
A; post-translational modification: acetylation

A;Cross-references: UNIPARC:UPI000017364D
R;Matsuda, M.; Lei, D.L.; Sugimoto, N.; Ozutsu, K.; Okabe, T.
Infect. Immun. 57, 3588-3593, 1989
A;Title: Isolation, purification, and characterization of fragment B, the NH-2-terminal
A;Reference number: A60759; MUID:90035436; PMID:2478476
A;Accession: A60759
A;Molecule type: protein
A;Residues: 461-475 <MAT>
A;Cross-references: UNIPARC:UPI000017364E
R;Demotz, S.; Lanzavecchia, L.; Elsel, U.; Niemann, H.; Widmann, C.; Corradin, G.
J. Immunol. 142, 394-402, 1989
A;Title: Delineation of several DR-restricted tetanus toxin T cell epitopes.
A;Reference number: JS0098; MUID:89093918; PMID:2463305
A;Contents: annotation; epitope region
R;Schiaivo, G.; Benfenati, F.; Foulain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A;Reference number: S27125; MUID:93063293; PMID:1331807
A;Contents: annotation
R;de Filippis, V.; Vangelista, L.; Schiaivo, G.; Tonello, F.; Montecucco, C.
Eur. J. Biochem. 229, 61-69, 1995
A;Title: Structural studies on the zinc-endopeptidase light chain of tetanus neurotoxin.
A;Reference number: S69348; MUID:95262688; PMID:7744050
A;Accession: S69348
A;Molecule type: protein
A;Residues: 2-31 <DEF>
A;Cross-references: UNIPARC:UPI000017364F
C;Comment: The source of this protein was an extrachromosomal plasmid.
C;Comment: The precursor is cleaved by endogenous proteinase activity to form light (fragment A) and heavy (fragment B) chains. The amino end of the heavy chain (fragment B) binds to ganglioside B. Fragment C binds to peripheral neuronal synapses, is internalized and cleaved by proteolytic cleavage of synaptic neurons. It inhibits neurotransmitter release by proteolytic cleavage of synaptic neurons.
C;Function: blocks neuroexocytosis via hydrolysis of a Gln-Phe peptide bond in synaptic vesicles
C;Superfamily: tetanus toxin
C;Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc
F;2-457/Product: tetroxylisin light chain (fragment A) #status predicted <TTL>
F;461-1315/Product: tetroxylisin heavy chain (fragment B.C) #status experimental <TTH>
F;461-864/Domain: channel forming (fragment B) #status predicted <TXB>
F;865-1315/Domain: ganglioside binding (fragment C) #status predicted <TXC>
F;233,237/Binding site: zinc (His) #status predicted
F;234/Active site: Glu #status predicted

Query Match 24.2%; Score 553; DB 1; Length 1315;
Best Local Similarity 30.2%; Pred. No. 3.3e-24;
Matches 139; Conservative 92; Mismatches 151; Indels 78; Gaps 18;

Qy 19 IKDNLDMRYENKFKIDISGYSNINGSVDYIY-STNRNQGIYSKSPSEVNIAQNND 77
Db 881 LKKSITLNDINDDISDFNSVITYPPAQLVPGINGKAIHLVNSESSEVIVHKMD 940
Qy 78 IYNGRYONFSIFWRIPIKFKVKNL-----NNEYTIIDCIRNN-----SGWKISLNYK 129
Db 941 IEYNDMFNFVTFWRLVPK-VSASHLEQYGTNEYSIISMKHSLSTGSGWSVSLKGN 999
Qy 130 LIWLTQDTAGNKKLVNTQWISD-----YI-NKIFVTITNRLGNSRIYINGNLD 184
Db 1000 LIWLTQDSAGEVQITFR-----DLDPKFNAYLANKWFFITITDRLSSANLYINGVLMG 1054
Qy 185 EKSLNSLGDHIVSDNLPKIVGC-NDTRYVGIRYKVPDTELGTETIELYSDFDPISL 243
Db 1055 SAEITGLGAIEDNNITLKLRCNNQYVSIDKRFCKALNPKIEKLYTSYLSITFL 1114
Qy 244 KDFGNVLLYKRYLLNLLRTDKSITQNSFLN-----INQOYGVKPNFSTRITYTG 299
Db 1115 RDFWGNPLRYTEYLLIPVASSKDV-QLKNITDYMILTNPASVYNGKLIYYR-RLYNG 1172
Qy 300 VEVIIRKNGSTDISTNDFNFKNDLAYINVDROVEYELYADISTAKPEIKLIRTSNS 359
Db 1173 LKFIIR--YTPNNEHDFSVKSGDF-----IKLY--VSTNNNEHIVGVKPGKNA 1217
Qy 360 NNSLGLIIVMDSIGNC-----TWNFNQNNNGNIGLIGFHSNN 397

Db 1218 FNNLDRIL---RVGNAPGIPLYKKMEAVKLRDLKTSYQKLYDDKNASGLGVGTHNGQ 1274
Qy 398 -----LVASSWTYNNIRKNTSSNGCFWSPISKEHGW 428
Db 1275 IGNDPNRDIILASNWFENHLKDKIL--GCDWYFVPTDEGW 1312

RESULT 15
A49777
botulinum neurotoxin type C1 precursor - Clostridium botulinum (type C, strain c-st)
C;Species: Clostridium botulinum
C;Date: 10-Mar-1994 #sequence revision 07-Apr-1994 #text_change 09-Jul-2004
A;Accession: S11291; A35396; S22166; A49777
R;Hauser, D.; Eklund, M.W.; Kurazono, H.; Binz, T.; Niemann, H.; Gall, D.M.; Boquet, P.A.
Nucleic Acids Res. 18, 4924, 1990
A;Title: Nucleotide sequence of Clostridium botulinum C1 neurotoxin.
A;Reference number: S11291; MUID:90370487; PMID:2204031
A;Accession: S11291
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-84, P', 86-1291 <HAU>
A;Cross-references: UNIPROT:Q93HT3; UNIPARC:UPI000016075D; EMBL:X53751; NID:914905; PIDN:R;Kimura, K.; Fujii, N.; Tazukaki, K.; Murakami, T.; Indoh, T.; Yokosawa, N.; Takeshi, K.
Biochem. Biophys. Res. Commun. 171, 1304-1311, 1990
A;Title: The complete nucleotide sequence of the gene coding for botulinum type C-1 toxin
A;Reference number: A35396; MUID:91024998; PMID:2222445
A;Accession: A35396
A;Status: preliminary; not compared with conceptual translation
A;Molecule type: DNA
A;Residues: 1-669, R', 671-1291 <TS1>
A;Cross-references: UNIPARC:UPI0000176709
R;Tazukaki, K.; Kimura, K.; Fujii, N.; Yokosawa, N.; Oshima, K.
Submitted to the EMBL Data Library, December 1991
A;Description: Nucleotide sequence of the gene for one of the components of hemagglutinin
A;Reference number: S22166
A;Accession: S22166
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1291 <TS2>
A;Cross-references: UNIPARC:UPI000003B3F0; EMBL:X62389; NID:9558175; PIDN:CAA44263.1; PIDN:R;Kimura, K.; Fujii, N.; Tazukaki, K.; Murakami, T.; Indoh, T.; Yokosawa, N.; Oshima, K.
Appl. Environ. Microbiol. 57, 1168-1172, 1991
A;Title: Cloning of the structural gene for Clostridium botulinum type C-1 toxin and whole
A;Reference number: A49777; MUID:91282468; PMID:2059039
A;Accession: A49777
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-607 <TS3>
A;Cross-references: UNIPARC:UPI000017670A; GB:D90210
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 23.9%; Score 546; DB 2; Length 1291;
Best Local Similarity 31.5%; Pred. No. 8.2e-24;
Matches 146; Conservative 82; Mismatches 169; Indels 66; Gaps 16;

Qy 1 SYTNDKILILYFNKLYKIKVDSILDMRYENKFKIDISGYSNINGSVDYIYSTNRNQF 60
Db 850 SYTNNSLKDIIIEYFNINDSKILSLQNRKTLVDTSGYNAEVSEEGVQLNDFPFD 909
Qy 61 GIYSS--KPSEVNIAQNNDIYNGRYONFSIFWRIPIKFKVKNLNEYTIIDCIRNN 118
Db 910 KLGSSGEDRKIVTQENIVYNSWESFISFWIRINKWVS--NLPG-YTIIDSVK-NN 965
Qy 119 SGWKISLNYKLIWLTQDTAGNKKLVNTQWISDYSIDYINKWIFVTITNRLGNSRIYI 178
Db 966 SGWSIGIISNLFVTLTKQNEDESEQISNFSYDINNAPGY-NKWFVFTVTNNMGMKIYI 1024
Qy 179 NGNLIDEKSLNSLGDHIVSDNLPKIVGCNDTRV-----GIRYKVFDELGKTE 229
Db 1025 NGKLIDITKVKELTGINFSTKITTEINKIPDTGLITSDSNINMWIRDFYIFAKELDGKD 1084

Qy 230 IETIYSEDPDSILKDFWGNLYLNKRYLLNLLRTDKSITQNSFNFLNINQQRGVYQKPN 289
Db 1085 INILFNSLOYTNVVDYWGNDLRYNKEYVMYDYLNRMYVANSRQIVFTR----- 1137
Qy 290 IFSNRLYTGVEVIRK-NGSTDISNTDNFVRKNDLAYINVVDREYRL-----YAD 341
Db 1138 --NNDFNEGYKIIKIRIGNTN---DTRVRGGDILYFDMTINNKAYNLFMKQVETMYAD 1191
Qy 342 -----ISIAKPEKIIKLRTSNNSNLSGQIIVMDSIGNNCTMNFQNN-NGGNI-GL 390
Db 1192 NHSTEDIYALGREQTKDI-----NDNIIQIOPWANTYYASQIFKSNFNGENISGI 1244
Qy 391 LGFHSNNL-VASSWYNNIRKNTSSNGCF-----WSFI 422
Db 1245 CSIGTYRFLGGDWYRHNYLPTVKQGNYSALLESTSTHWGFV 1287

Search completed: March 2, 2006, 00:47:40
Job time : 38 secs

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:32:07 ; Search time 221 Seconds
(without alignments)
1375.940 Million cell updates/sec

Title: US-08-981-087B-1
Perfect score: 2288
Sequence: 1 SYTNDKILILYFNKLYKKIK.....TSSNGCFWSPISKHGQEN 431

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2166443 seqs, 705528306 residues

Total number of hits satisfying chosen parameters: 2166443

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : UniProt_05_80.*

1: uniprot_sprot.*

2: uniprot_trembl.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	2288	100.0	1278	Q57236 CLOBO	Q57236 clostridium
2	1887.5	82.5	1280	Q92AJ5 CLOBO	Q92AJ5 clostridium
3	1833	80.1	1274	BXF CLOBO	P30996 clostridium
4	1827	79.9	1268	Q45851 9CLOT	Q45851 clostridium
5	1458	63.7	1251	Q9K395 CLOBO	Q9K395 clostridium
6	1457.5	63.7	1252	Q54A79 CLOBO	Q54A79 clostridium
7	1442.5	63.0	1252	Q8KZM3 CLOBO	Q8KZM3 clostridium
8	1442.5	63.0	1255	Q9PAR6 CLOBO	Q9PAR6 clostridium
9	1429	62.5	1250	BXE CLOBO	Q00496 clostridium
10	1426	62.3	1250	BXE CLOBO	P30995 clostridium
11	1120.5	49.0	1295	BXA1 CLOBO	P10845 clostridium
12	1120.5	49.0	1296	Q7B8V4 CLOBO	Q7B8V4 clostridium
13	1092.5	47.7	1295	BXA2 CLOBO	Q45894 clostridium
14	1092.5	47.7	1296	Q5SGH1 CLOBO	Q5SGH1 clostridium
15	1081.6	35.7	1291	Q79AH9 CLOBO	Q79AH9 clostridium
16	1081.6	35.3	1291	Q8GR96 CLOBO	Q8GR96 clostridium
17	787	34.4	1291	Q9X708 CLOBO	Q9X708 clostridium
18	776	34.1	1291	Q80077 CLOBO	Q80077 clostridium
19	776	33.9	1291	Q933K0 CLOBO	Q933K0 clostridium
20	775	33.9	1291	Q92AJ5 CLOBO	Q92AJ5 clostridium
21	770	33.7	1291	Q93G71 CLOBO	Q93G71 clostridium
22	769	33.6	1290	BXB CLOBO	P10844 clostridium
23	736.5	32.2	1296	BXG CLOBO	Q60393 clostridium
24	590.5	25.8	1280	Q45861 CLOBO	Q45861 clostridium
25	590.5	25.8	1280	Q841S3 CLOBO	Q841S3 clostridium
26	588.5	25.7	1280	Q45849 CLOBO	Q45849 clostridium
27	588.5	25.7	1280	Q9LBS7 CLOBO	Q9LBS7 clostridium
28	580.5	25.4	1276	BXD CLOBO	P19321 clostridium
29	577.5	25.2	1275	Q9GTG7 CBDP	Q9GTG7 clostridium
30	574.5	25.1	1280	Q5DW55 CLOBO	Q5DW55 clostridium
31	559	24.4	451	Q9LA13_CLOTE	Q9LA13 clostridium

32 553 24.2 1314 1 TETX_CLOTE P04958 clostridium
33 546 23.9 1290 1 BXC1_CLOBO P18640 clostridium
34 546 23.9 1291 2 Q93HT3_CLOBO Q93HT3 clostridium
35 542 23.7 1310 2 Q93N27_CLOTE Q93N27 clostridium
36 509 22.2 1285 2 Q9LBR1_CLOBO Q9LBR1 clostridium
37 508 22.2 1285 2 Q45967_CLOBO Q45967 clostridium
38 392 17.1 77 2 Q6Q798_CLOBO Q6Q798 clostridium
39 368 16.1 361 2 Q45848_CLOBO Q45848 clostridium
40 367 16.0 361 2 Q45846_CLOBO Q45846 clostridium
41 330 14.4 77 2 Q6Q797_9CLOT Q6Q797 clostridium
42 286 12.5 1197 2 Q45888_CLOBO Q45888 clostridium
43 285.5 12.5 1198 2 Q06018_CLOBO Q06018 clostridium
44 281 12.3 1197 2 Q92AJ9_CLOBO Q92AJ9 clostridium
45 281 12.3 1197 2 P71117_CLOBO P71117 clostridium

ALIGNMENTS

RESULT 1
Q57236 CLOBO PRELIMINARY; PRT; 1278 AA.
AC Q57236 Q45863;
DT 01-NOV-1996 (TREMBlrel. 01, Created)
DT 01-NOV-1996 (TREMBlrel. 01, Last sequence update)
DT 01-FEB-2005 (TREMBlrel. 29, Last annotation update)
DE BONT/F (Neurotoxin type F).
GN Name=bont/f; Synonyms=bont/F;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=NCIC 10281;
RA Hutson R.A., Collins M.D.;
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
[2]
RN NUCLEOTIDE SEQUENCE.
RA Elmore M.J., Bodsworth N.J., Whelan S.M., Minton N.P.;
RL Submitted (AUG-1994) to the EMBL/GenBank/DBJ databases.
DR EMBL; X81714; CAA57358.1; -; Genomic DNA.
DR EMBL; L35496; AAA23210.1; -; Genomic DNA.
DR PIR; S48110; S48110.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M27_BS.
DR Pfam; PF01742; Peptidase_M27_1.
DR PRINTS; PR00760; BONTOLIXIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
KW Neurotoxin.
SQ SEQUENCE 1278 AA; 147073 MW; A1B1318431D6918 CRC64;

Query Match 100.0%; Score 2288; DB 2; Length 1278;
Best Local Similarity 100.0%; Pred. No. 6.9e-128;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKKNSILDMRYENKFKIDISGYNSISINGDVYIYSTNRQF 60
848 SYTNDKILILYFNKLYKKIKKNSILDMRYENKFKIDISGYNSISINGDVYIYSTNRQF 907
QY 61 GIIYSKPSKVNTAQNNDIIYNGRYONFISFWVRIPKYNKVLNNEVTIIDICRNNNSG 120
908 GIIYSKPSKVNTAQNNDIIYNGRYONFISFWVRIPKYNKVLNNEVTIIDICRNNNSG 967
QY 121 WKISLNNYKIIWTLTQDTAGNQKLVFNFTYMTISISDYINKWIFVTITNNLGNRIYNG 180

RX MEDLINE=94230352; PubMed=8175689;
 RA Yamaeaki S. Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
 RA Roques B., Fyke E.M., Suedhof T.C., Jahn R., Niemann H.; types D and F
 RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
 RT J. Biol. Chem. 269:12764-12772(1994).
 RL J. Biol. Chem. 269:12764-12772(1994).
 CC -1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
 CC release. It binds to peripheral neuronal synapses, is internalized
 CC and moves by retrograde transport up the axon into the spinal cord
 CC where it can move between postsynaptic and presynaptic neurons. It
 CC inhibits neurotransmitter release by acting as a zinc
 CC endopeptidase that catalyzes the hydrolysis of the 58-Gln-Lys-59
 CC bond of synaptobrevins-1 and -2.
 CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -1- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
 CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H). The light chain has the pharmacological activity,
 CC while the N- and C-terminal of the heavy chain mediate channel
 CC formation and toxin binding, respectively.
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -1- SIMILARITY: Belongs to the peptidase M27 family.
 CC
 CC This Swiss-Prot entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.
 CC
 CC EMBL; M92906; AAA23263.1; -; Genomic DNA.
 CC EMBL; S73676; AAC60475.1; -; Genomic DNA.
 CC EMBL; X70820; CAA50151.1; -; Genomic DNA.
 CC EMBL; X70816; CAA50147.1; -; Genomic DNA.
 CC PIR; I40813; I40813.
 CC PIR; S48109; S48109.
 CC HSP; Q45894; IEIH.
 CC MEROPS; M27.002; -.
 CC InterPro; IPR011591; Botulinum.
 CC InterPro; IPR006025; Pept_M_Zn_BS.
 CC InterPro; IPR000395; Peptidase_M27.
 CC InterPro; IPR012928; Toxin_recept_bd_N.
 CC InterPro; IPR012500; Toxin_trans.
 CC Pfam; PF01742; Peptidase_M27; 1.
 CC Pfam; PF07953; Toxin_R_bind_N; 1.
 CC Pfam; PF07952; Toxin_trans; 1.
 CC PRINTS; PR00760; BONTOLYLXIN.
 CC ProDom; PD001963; Botulinum; 1.
 CC PROSITE; PS00142; ZINC_PROTEASE; 1.
 CC Hydrolase; Metal-binding; Metalloprotease; Neurotoxin; Protease;
 CC Toxin; Transmembrane; Zinc.
 CC CHAIN 1 436 Botulinum neurotoxin F light chain.
 CC CHAIN 437 1274 Botulinum neurotoxin F heavy chain.
 CC ACT_SITE 228 228 By similarity.
 CC METAL 227 227 Zinc (catalytic) (By similarity).
 CC METAL 231 231 Zinc (catalytic) (By similarity).
 CC DISULFID 429 445 Interchain (between light and heavy
 CC chains) (Probable).
 CC SEQUENCE 1274 AA; 146710 MW; 5B99756A/438B921 CRC64;
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 CC Query Match 80.1%; Score 1833; DB 1; Length 1274;
 CC Best Local Similarity 81.3%; Pred. No. 8.9e-101;
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 CC 1 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNPF 60
 CC 847 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNPF 906
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 CC 61 GYSSKPESEVNTAQNNDIYNGRYQNFPSFWVRIPKYNKVLNNEYTIIDICRNNNSG 120
 CC 907 GYNSRLSEVNTAQNNDIYNGRYQNFPSFWVRIPKYPWNHNEYTIIDICRNNNSG 966

QY 121 WKISLNYNK--IITWLTQTAGNOKLVNYTOMISIDYINKWIFVTITNNRLGNSRIY 177
 DB 967 WKISLRTVDCIITWLTQTAGNOKLVNYTOMISIDYINKWIFVTITNNRLGNSRIY 1026
 QY 178 INGNLIDKESINLGDHVSNDILFKVGCNDRYVYGVYKVDTELKGTETETLYSDE 237
 DB 1027 INGNLIVKESINLGDHVSNDILFKVGCNDRYVYGVYKVDTELKGTETETLYSNE 1086
 QY 238 PDPSILKDFWGNLYLLNRYLLNLRDTSITQNSFNFLNINQORGVYQKPNIFSNTLY 297
 DB 1087 PDPSILKDFWGNLYLLNRYLLNLRDTSITQNSFNFLNINQORGVYQKPNIFSNTLY 1145
 QY 298 TGVETIIRKNGSTDSINTNFVRKNDLAVINVVDRVFEYRLYADIAPKEIKIIRTS 357
 DB 1146 EGVETIIRKNGSTDSINTNFVRKNDLAVINVVDRVFEYRLYADIAPKEIKIIRTS 1201
 QY 358 NSNNSLGOIIVMDSIGNCTMNFQNNNGNIGLGHSHNNLVASSWYNNIRKNTSSNGC 417
 DB 1202 NLNDSLGOIIVMDSIGNCTMNFQNNNGNIGLGHSHNNLVASSWYNNIRKNTSSNGC 1261
 QY 418 FWSFISKEHGWQE 430
 DB 1262 FWSFISKEHGWKE 1274
 RESULT 4
 Q45851_9CLOT
 ID Q45851_9CLOT PRELIMINARY; PRT; 1268 AA.
 AC Q45851;
 DT 01-NOV-1996 (TrEMBLrel. 01, Created)
 DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
 DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
 DE Neurotoxin type F.
 GN Name:bont /f;
 OS Clostridium baratii.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1561;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RX MEDLINE=93252228; PubMed=8486245; DOI=10.1016/0378-1097(93)90581-L;
 RA Thompson D.E., Hutson R.A., East A.K., Allaway D., Collins M.D.,
 RA Richardson P.T.;
 RT "Nucleotide sequence of the gene coding for Clostridium baratii type F
 RT neurotoxin: comparison with other clostridial neurotoxins.";
 RL FEMS Microbiol. Lett. 108:175-182(1993).
 DR EMBL; X68262; CAA48329.1; -; Genomic DNA.
 DR PIR; S33411; S33411.
 DR HSP; Q45894; IEIH.
 DR MEROPS; M27.002; -.
 DR GO; GO:0016021; C: integral to membrane; IEA.
 DR GO; GO:0008237; F: metalloproteinase activity; IEA.
 DR GO; GO:0009405; P: pathogenesis; IEA.
 DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
 DR InterPro; IPR011591; Botulinum.
 DR InterPro; IPR000395; Peptidase_M27.
 DR InterPro; IPR006025; Pept_M_Zn_BS.
 DR Pfam; PF01742; Peptidase_M27; 1.
 DR PRINTS; PR00760; BONTOLYLXIN.
 DR ProDom; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
 KW Neurotoxin.
 SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15ED2 CRC64;
 CC
 CC Query Match 79.9%; Score 1827; DB 2; Length 1268;
 CC Best Local Similarity 78.8%; Pred. No. 2e-100;
 CC Matches 338; Conservative 38; Mismatches 53; Indels 0; Gaps 0;
 CC
 CC 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNPF 61
 CC 840 YTNDKILILYFNKLYKKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNPF 899

```

QY 62 IYSSKPSVNAQNNDIYNGRYQNFISFWVRIPKYNKVLNMEYTIIDCIRNNNSGW 121
DB 900 IYSSRLSEVNTQNTTIYNSRYQNFVSFWVRIPKYNKVLNMEYTIIDCIRNNNSGW 959
QY 122 KISLNYNKKIITWLODTAGNOKLVNTQMSISDYINKWIFVTITNRLGNSRIYNGN 181
DB 960 KISLNYNKKIITWLODTAGNOKLVNTQMSISDYINKWIFVTITNRLGNSRIYNGN 1019
QY 182 LIDKESISNLGDHVSNDILFKVGCNDTRVVGIRYKFPDTELKTEIETLYSDEPDPS 241
DB 1020 LTOQKSLNLGNHIVDNDILFKVGCNDTRVVGIRYKFPDTELKTEIETLYSDEPD 1079
QY 242 ILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNQOQGVYQKPNFISNTRLYTGE 301
DB 1080 ILKDFWGNLYLLYKRYLLNLLRPMSVTNSDILNINRQGIYSKINIFSNARLYTGE 1139
QY 302 VIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISTAKPKIKLIRTSNSN 361
DB 1140 VIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISTAKPKIKLIRTSNSN 1199
QY 362 SLGQIIVMDSIGNCTMNFONNGNIGLLGFHNSNLVASSWYNNIRKNTSSNGCFWSP 421
DB 1200 NSQMIIMDSIGNCTMNFONNGNIGLLGFHNSNLVASSWYNNIRKNTSSNGCFWSP 1259
QY 422 ISKEHGWOE 430
DB 1260 ISKEHGWOE 1268

RESULT 5
ID Q9K395_CLOBU PRELIMINARY; PRT; 1251 AA.
AC Q9K395;
DT 01-OCT-2000 (TrEMBLrel. 15, Created)
DT 01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT 01-FEB-2005 (TrEMBLrel. 29, Last annotation update)
DE Type E botulinum toxin.
GN Name=bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=LCL 095, LCL 155, KZ 1899, KZ 1897, KZ 1898, KZ 1886, KZ 1887, KZ 1889, KZ 1890, KZ 1891, and LCL 063;
RX MEDLINE=20509829; PubMed=11055954;
RX DOI=10.1128/AEM.66.11.4992-4997.2000;
RA Wang X., Maegawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y., Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RT "Genetic analysis of type E botulinum toxin-producing Clostridium butyricum strains.";
RL Appl. Environ. Microbiol. 66:4992-4997(2000).
DR EMBL; AB037714; BAB03522.1; -; Genomic DNA.
DR EMBL; AB037704; BAB03512.1; -; Genomic DNA.
DR EMBL; AB037705; BAB03513.1; -; Genomic DNA.
DR EMBL; AB037706; BAB03514.1; -; Genomic DNA.
DR EMBL; AB037710; BAB03518.1; -; Genomic DNA.
DR EMBL; AB037712; BAB03520.1; -; Genomic DNA.
DR EMBL; AB037713; BAB03521.1; -; Genomic DNA.
DR EMBL; AB037711; BAB03519.1; -; Genomic DNA.
DR EMBL; AB037709; BAB03517.1; -; Genomic DNA.
DR EMBL; AB037708; BAB03516.1; -; Genomic DNA.
DR EMBL; AB037707; BAB03515.1; -; Genomic DNA.
DR HSSP; Q45894; 1ELH.
DR SNR; Q9K395; 2-412.
DR GO; GO:0008233; F:peptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M.Zn.BS.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR012928; Toxin_recpt_bd_N.

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DR InterPro; IPR012500; Toxin trans.
DR Pfam; PF01742; Peptidase_M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PR00760; BONTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
SQ SEQUENCE 1251 AA; 143752 MW; 2021F4E427070296 CRC64;

Query Match 63.7%; Score 1458; DB 2; Length 1251;
Best Local Similarity 62.7%; Pred. No. 1.9e-78;
Matches 271; Conservative 75; Mismatches 74; Indels 12; Gaps 5;

QY 1 SYTNDKILILYENKLYKKIKDMSILDMRYENKFKIDISGVGNSISNGDVYIYSTNRNQF 60
DB 829 SYTDDKILISYFNKFKRIKSSVLNRYNDKYDVTSGYDSNININGEIFYIPTNKNQF 888
QY 61 GYSSKPSVNAQNNDIYNGRYQNFISFWVRIPKYNKVLNMEYTIIDCIRNNNS 119
DB 889 TIFNSKPSVNAQNNDIYNGRYQNFISFWVRIPKYNKVLNMEYTIIDCIRNNNS 948
QY 120 GWKISLNYNKKIITWLODTAGNOKLVNTQMSISDYINKWIFVTITNRLGNSRIYIN 179
DB 949 GWKVSLNHNHIIITWLODNARINQKLVFKYGNANGISDYINKWIFVTITNRLGNSRIYIN 1008
QY 180 GNLIDKESISNLGDHVSNDILFKVGCNDTRVVGIRYKFPDTELKTEIETLYSDEPD 239
DB 1009 GHLIDKESISNLGDHVSNDILFKVGCNDTRVVGIRYKFPDTELKTEIETLYSDEPD 1068
QY 240 PSILKDFWGNLYLLYKRYLLNLLRTDKSI-TQNSNPLNQOQGVYQKPNFISNTRLYT 298
DB 1069 TNLKDFWGNLYLLYKRYLLNLLRPMSVTNSDILNINRQGIYSKINIFSNARLYT 1123
QY 299 GVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISTAKPKIKLIRTSN 358
DB 1124 GIKVKIQR--VNDSTNDRFVRKNDQVYINYSNSSSYLYADTNTDKEKTIK---SSS 1178
QY 359 SNNSLGOIIVMDSIGNCTMNFONNGNIGLLGFHNSNLVASSWYNNIRKNTSSNGCF 418
DB 1179 SGNRFQVQVVMNSGVNCTMNFONNGNIGLLGFKADTVVASTWYIYTHRDHTNSNGCF 1238
QY 419 WSFISKEHGWOE 430
DB 1239 WNFISEHGWOE 1250

RESULT 6
ID Q54A79_CLOBO PRELIMINARY; PRT; 1252 AA.
AC Q54A79;
DT 13-SEP-2005 (TrEMBLrel. 31, Created)
DT 13-SEP-2005 (TrEMBLrel. 31, Last sequence update)
DT 13-SEP-2005 (TrEMBLrel. 31, Last annotation update)
DE Botulinum neurotoxin type E.
GN Name=bont/E;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=35396;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T., Nakamura S., Karasawa T., Kozaki S.;
RT "Sequence of the botulinum neurotoxin type E.";
RL Submitted (MAR-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB082519; BAB86845.1; -; Genomic DNA.
DR Neurotoxin.
SQ SEQUENCE 1252 AA; 143637 MW; 76401D4D2E95D7A2 CRC64;

Query Match 63.7%; Score 1457.5; DB 2; Length 1252;
Best Local Similarity 63.4%; Pred. No. 2.1e-78;
Matches 276; Conservative 72; Mismatches 70; Indels 17; Gaps 7;

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QY 1 SYTNDKILILYFNKLYKKIKONSLDMRYENKPFIDISGYGNSISINGDVYIYSTRNQF 60
DB 829 SYTDDKILISYFNKPFKRIKSSSVLNMRYKNDKYDVTSGYDSNININGDVYKYPTNKQF 888
QY 61 GYSSKPESEVNIQAONDIYNGRYQNFPSISFWVRIPKYPNK-VNLNNEYTIIDCIRNNNS 119
DB 889 GIYNDKLSSEVNIQNDIYNDKRYKNSISFWVRIPYNDKIVNVNNEYTIINCMDRNS 948
QY 120 GWKISLNYNKIITLQDTAGNNOKLAFNYGNANGISDIYINKWIFVTITNRLGDSKLYIN 179
DB 949 GWKVSLSNHEIITLQDNGINOKLAFNYGNANGISDIYINKWIFVTITNRLGDSKLYIN 1008
QY 180 GNLIDKSIKSLNGLIHVSDNLFKIVGNCNDRYVIGIRYFVDFELGKTEIETLYSDEPD 239
DB 1009 GNLIDKSIKSLNGLIHVSDNLFKIVGNCNDRYVIGIRYFVDFELGKTEIETLYSNEPN 1068
QY 240 PSILKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVYQKNIFSNTRLYT 298
DB 1069 TNLKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVYQKNIFSNTRLYT 1123
QY 299 GVEVIRK--NGSTDISTDNFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKIILIR 355
DB 1124 GIKVKIQRVNNSSTN---DNLVRKNDQVYINFAVASKTHLLPLYADTATTNKERTIKI-- 1177
QY 356 TSNSNLSGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 415
DB 1178 -SSGNRFQNVVWNSVGNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 1236
QY 416 GCFWFSFISKEHGWQE 430
DB 1237 GCFWFSFISKEHGWQE 1251

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RESULT 7
Q8KZM3 CLOU
ID Q8KZM3 CLOU PRELIMINARY; PRT; 1252 AA.
AC Q8KZM3
DT 01-OCT-2002 (TrEMBLrel. 22, Created)
DT 01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Type E botulinum toxin.
GN Name=bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 5262;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T., Nakamura S., Karasawa T., Kozaki S.;
RL Submitted (JUL-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB088207; BAC05434.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q8KZM3; 2-412.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept M Zn BS.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOLYLIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1252 AA; 143510 MW; 41B633BB744D3B41 CRC64;

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Query Match 63.0%; Score 1442.5; DB 2; Length 1252;
 Best Local Similarity 63.0%; Pred. No. 1.6e-77;
 Matches 274; Conservative 73; Mismatches 71; Indels 17; Gaps 7;

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QY 1 SYTNDKILILYFNKLYKKIKONSLDMRYENKPFIDISGYGNSISINGDVYIYSTRNQF 60
DB 829 SYTDDKILISYFNKPFKRIKSSSVLNMRYKNDKYDVTSGYDSNININGDVYKYPTNKQF 888
QY 61 GYSSKPESEVNIQAONDIYNGRYQNFPSISFWVRIPKYPNK-VNLNNEYTIIDCIRNNNS 119
DB 889 GIYNDKLSSEVNIQNDIYNDKRYKNSISFWVRIPYNDKIVNVNNEYTIINCMDRNS 948
QY 120 GWKISLNYNKIITLQDTAGNNOKLAFNYGNANGISDIYINKWIFVTITNRLGDSKLYIN 179
DB 949 GWKVSLSNHEIITLQDNGINOKLAFNYGNANGISDIYINKWIFVTITNRLGDSKLYIN 1008
QY 180 GNLIDKSIKSLNGLIHVSDNLFKIVGNCNDRYVIGIRYFVDFELGKTEIETLYSDEPD 239
DB 1009 GNLIDKSIKSLNGLIHVSDNLFKIVGNCNDRYVIGIRYFVDFELGKTEIETLYSNEPN 1068
QY 240 PSILKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVYQKNIFSNTRLYT 298
DB 1069 TNLKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVYQKNIFSNTRLYT 1123
QY 299 GVEVIRK--NGSTDISTDNFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKIILIR 355
DB 1124 GIKVKIQRVNNSSTN---DNLVRKNDQVYINFAVASKTHLLPLYADTATTNKERTIKI-- 1177
QY 356 TSNSNLSGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 415
DB 1178 -SSGNRFQNVVWNSVGNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 1236
QY 416 GCFWFSFISKEHGWQE 430
DB 1237 GCFWFSFISKEHGWQE 1251

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RESULT 8

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Q9FAR6 CLOU
ID Q9FAR6 CLOU PRELIMINARY; PRT; 1255 AA.
AC Q9FAR6
DT 01-MAR-2001 (TrEMBLrel. 16, Created)
DT 01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Type E botulinum toxin.
GN Name=bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 6340/ATCC 43755/BL 5520/KZ 147;
RX MEDLINE=20509829; PubMed=11055954;
RX DOI=10.1128/AEM.66.11.4992-4997.2000;
RA Wang X., Maegawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y., Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RL "Genetic analysis of type E botulinum toxin-producing Clostridium butyricum strains.";
RT Appl. Environ. Microbiol. 66:4992-4997(2000).
RL EMBL; AB039264; BAB12249.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q9FAR6; 5-415.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept M Zn BS.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOLYLIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1255 AA; 143917 MW; 1B557B9D85CD8E4D CRC64;

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Query Match 63.0%; Score 1442.5; DB 2; Length 1255;


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DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin recpt_bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PR00760; BONTOLYLIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
KW Metalloprotease; Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
FT INIT MET 0
FT CHAIN 1 421 Botulinum neurotoxin E light chain.
FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
FT ACT_SITE 212 212 By similarity.
FT METAL 211 211 Zinc (catalytic) (By similarity).
FT METAL 215 215 Zinc (catalytic) (By similarity).
FT DISULFID 411 425 Interchain (between light and heavy chains) (Probable).
FT CONFLICT 176 176 R -> G (in Ref. 2).
FT CONFLICT 197 197 C -> S (in Ref. 2 and 3).
FT CONFLICT 339 339 R -> A (in Ref. 2).
FT CONFLICT 772 772 I -> L (in Ref. 2 and 6).
FT CONFLICT 962 963 FE -> LQ (in Ref. 2 and 6).
FT CONFLICT 966 966 R -> A (in Ref. 2 and 6).
FT CONFLICT 1194 1194 N -> NN (in Ref. 2).
FT SEQUENCE 1250 AA; 143713 MW; D9FC26DDA041EB4 CRC64;

Query Match 62.5%; Score 1429; DB 1; Length 1250;
Best Local Similarity 62.5%; Pred. No. 1e-76;
Matches 272; Conservative 73; Mismatches 72; Indels 18; Gaps 8;

QY 1 SYTDKILLYPNKLYKKIKNSILDMRYENKFKIDISGYNSISNGDVIYSTNRQF 60
DB 828 SYTDKILLYPNKLYKKIKNSILDMRYENKFKIDISGYNSISNGDVIYSTNRQF 887
QY 61 GYISKPEVNIAQNDIYNGRYQNFISFWVRIPKYPNK-VNLNVEYTIIDICRNNS 119
DB 888 GYISKPEVNIAQNDIYNGRYQNFISFWVRIPKYPNK-VNLNVEYTIIDICRNNS 947
QY 120 GWKISLYNKIITLQDTAGNOKLVFNVTOMISDYINKWIFVTIYNRLGNSRIYN 179
DB 948 GWKISLYNKIITLQDTAGNOKLVFNVTOMISDYINKWIFVTIYNRLGNSRIYN 1007
QY 180 GNLIDKSIKSNIGDIHVSNDILFKVGCNDTRYGVIRYKVPDTELKTEIETLYSDPD 239
DB 1008 GNLIDKSIKSNIGDIHVSNDILFKVGCNDTRYGVIRYKVPDTELKTEIETLYSDPD 1067
QY 240 PSILKDFWGNLYLKNRYLLNLLRTDKSI-TQNSFNINQORGVYQKPNIFSNRLYT 298
DB 1068 PSILKDFWGNLYLKNRYLLNLLRTDKSI-TQNSFNINQORGVYQKPNIFSNRLYT 1122
QY 299 GVEVIIRK--NGSTDISNTDFNRKNDLAYIN-VVDRDVEYLYADISIAKPEKIKLIR 355
DB 1123 GVEVIIRK--NGSTDISNTDFNRKNDLAYIN-VVDRDVEYLYADISIAKPEKIKLIR 1176
QY 356 TGSNNLSLQIIVMSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTGSN 415
DB 1177 TGSNNLSLQIIVMSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTGSN 1234
QY 416 GCFWSPISKEHGQOE 430
DB 1235 GCFWSPISKEHGQOE 1249

RESULT 10
BXE CLOBU STANDARD; PRT; 1250 AA.
AC P30995;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
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DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BONT/E)
DE (Bontoxilysin E) [Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain].
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=ATCC 43181, and ATCC 43755;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulinum neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113 (1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RC STRAIN=BL6340;
RX MEDLINE=91237316; PubMed=2033376;
RA Fujii N., Kimura K., Murakami T., Indoh T., Tazuki K., Yokosawa N.,
RA Yaehiki T., Ogura K.;
RT "Cloning of a DNA fragment encoding the 5'-terminus of the botulinum
RT type E toxin gene from Clostridium butyricum strain BL6340.";
RL J. Gen. Microbiol. 137:519-525 (1991).
RN [3]
RP PROTEIN SEQUENCE OF 1-48.
RC STRAIN=5262;
RA Gmenez J., Foley J., Dasgupta B.R.;
RT "Neurotoxin type E from Clostridium botulinum and C. butyricum;
RT partial sequence and comparison.";
RL FASEB J. 2:A1750-A1750 (1988).
CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC -----
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC -----
CC EMBL; X62088; CAA43998.1; -; Genomic_DNA.
CC EMBL; X53180; CAA37321.1; -; Genomic_DNA.
CC PIR; JH0256; JH0256.
CC HSSP; O45894; 1E1H.
CC SMR; P30995; 1-411.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR006025; Pept M Zn BS.
CC InterPro; IPR000395; Peptidase M27.
CC InterPro; IPR012928; Toxin recpt_bd_N.
CC InterPro; IPR012500; Toxin_trans.
CC Pfam; PF01742; Peptidase M27; 1.
CC Pfam; PF07953; Toxin R_bind_N; 1.
CC Pfam; PF07952; Toxin_trans; 1.
CC PRINTS; PR00760; BONTOLYLIN.
CC PRODOM; PD001963; Botulinum; 1.
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DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Direct protein sequencing; Hydrolase; Metal-binding; Metalloprotease;
KW Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
FT INIT_MET 0
FT CHAIN 1 421 Botulinum neurotoxin E light chain.
FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
FT ACT_SITE 212 212 By similarity.
FT METAL 211 211 Zinc (catalytic) (By similarity).
FT METAL 215 215 Zinc (catalytic) (By similarity).
FT DISULFID 411 425 Interchain (between light and heavy chains) (Probable).
FT CONFLICT 229 229 K -> M (in Ref. 2).
SQ SEQUENCE 1250 AA; 143266 MW; 8171B5B2C2312857 CRC64;

Query Match 62.3%; Score 1426; DB 1; Length 1250;
Best Local Similarity 62.8%; Pred. No. 1.5e-76;
Matches 273; Conservative 73; Mismatches 71; Indels 18; Gaps 8;

QY 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGSNISINGDVVYSTNRNQF 60
DB 828 SYTDKILISYFNKFKRIKSSVNNRYKNDKVIDSGVDSNININGDVYKPTNKNQF 887

QY 61 GIYSKSEVNIAQNDDIIVNGRYQNFISIFWRIKPYFNK-VNLNNEYTIIDCIRNNNS 119
DB 888 GIYNDKLSVNIQNDVIYDNYKYNFISIFWRIKPYFNK-VNLNNEYTIIDCIRNNNS 947

QY 120 GWKLSLNYKLIWTLODTAGNOKLVFNQYQMSISDYINKWIPVTITNRLGNSRIYIN 179
DB 948 GWKYSLNHNEIWTLODNGINGINQKLAIFYNGANGISDYINKWIPVTITNRLGDSKLIYIN 1007

QY 180 GNLIDKSIISNLGDIHVSNDILPKIVGNDTRYGVIRYKVFDPTELCKTEIETLYSDPD 239
DB 1008 GNLIDKSIISNLGDIHVSNDILPKIVGNDTRYGVIRYKVFDPTELCKTEIETLYSDPD 1067

QY 240 PSILKDFWGNLYLLKRYKYLNLRLTDRKSIQNS-NFLNINQQRGVYQKPNIFSNTRYLT 298
DB 1068 ANILKDFWGNLYLLKRYKYLNLRLTDRKSIQNS-NFLNINQQRGVYQKPNIFSNTRYLT 1122

QY 299 GVEVIRK--NGSTDIDNTDNFVRKNDLAYIN-VDRDVEYRLYADISIAKPEKIILIR 355
DB 1123 GIKYKIQRVNNSSTN----DNLVRKNDQVYINFAVASKTHLLPLADYATTNKEKTIKI-- 1176

QY 356 TSNNNSLGIQIVMDSIGNCTNMFNQNGNIGLLGFHSHNLVASSWYNNIRKNTSSN 415
DB 1177 -SSGNRPNQVVNVNSVG-NCTMNFKNNGNIGLLGFKADTVVASTWYTHMRDNTNSN 1234

QY 416 GCFWSPISKEHGWE 430
DB 1235 GFFWNFISEHGWE 1249

RESULT 11
BXAL_CLOBO STANDARD; PRT; 1295 AA.
AC P10845; P01561; P18639;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BONT/A)
DE (Bontoxilysin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain].
DE Name: botA; Synonyms: atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / NCTC 2916;
RA Thompson D.E., Brehm J.K., Oultram J.D., Swinfield T.-J., Shone C.C.,
RA Atkinson T., Melling J., Minton N.P.;
RA "The complete amino acid sequence of the Clostridium botulinum type A
RT
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RT neurotoxin, deduced by nucleotide sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 189:73-81(1990).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / 62A;
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kuzazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158(1990).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / 62A;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT components of the botulinum toxin complex in proteolytic Clostridium
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
RN [4]
RP NUCLEOTIDE SEQUENCE OF 1-34.
RC STRAIN=Type A / Hall;
RX MEDLINE=89350959; PubMed=2669749;
RA Batley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of
RT the N-terminal encoding region.";
RL Biochem. Biophys. Res. Commun. 162:1388-1395(1989).
RN [5]
RP NUCLEOTIDE SEQUENCE OF 1-18.
RC STRAIN=Type A / NH;
RX MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RA Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RT "Molecular characterization of two forms of nontoxic-nonhemagglutinin
RT components of Clostridium botulinum type A progenitor toxins.";
RL FEBS Lett. 376:41-44(1995).
RN [6]
RP PROTEIN SEQUENCE OF 1-16.
RX MEDLINE=84178501; PubMed=6370252;
RA Schmidt J.J., Sartyoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequence of the heavy and light chains of
RT botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 119:900-904(1984).
RN [7]
RP PROTEIN SEQUENCE OF 1-46.
RA Dasgupta B.R., Foley J., Niece R.;
RT "Partial sequence of the light chain of botulinum neurotoxin type A.";
RL Biochemistry 26:4162-4162(1987).
RN [8]
RP PROTEIN SEQUENCE OF 1-5 AND 444-456.
RX MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RA Dasgupta B.R., Dekleva M.L.;
RT "Botulinum neurotoxin type A: sequence of amino acids at the N-terminus and around the nicking site.";
RL Biochimie 72:661-664(1990).
RN [9]
RP PROTEIN SEQUENCE OF 448-474 AND 872-895.
RX MEDLINE=89024662; PubMed=3178218;
RA Sathyamoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RT "Botulinum neurotoxin type A: cleavage of the heavy chain into two
RT halves and their partial sequences.";
RL Arch. Biochem. Biophys. 266:142-151(1988).
RN [10]
RP PROTEIN SEQUENCE OF 448-482.
RX MEDLINE=85285016; PubMed=3896784;
RA Shone C.C., Hambleton P., Melling J.;
RT "Inactivation of Clostridium botulinum type A neurotoxin by trypsin
RT and purification of two tryptic fragments. Proteolytic action near the
RT COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RL Eur. J. Biochem. 151:75-82(1985).
RN [11]
RP PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
```

RX PubMed=8397793;
 RA Gineez J.A., Dasgupta B.R.;
 RT "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72,
 RL 45, 42, and 18 kD fragments.";
 RN J. Protein Chem. 12:351-363(1993).
 RP [12]
 RP IDENTIFICATION OF SUBSTRATE.
 RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
 RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
 RA Benfenati F., Wilson M.C., Montecucco C.;
 RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
 RL COOH-terminal peptide bonds.";
 RN FEBS Lett. 335:95-103(1993).
 RP [13]
 RP IDENTIFICATION OF SUBSTRATE.
 RX MEDLINE=94124495; PubMed=8294407;
 RA Binz T., Blas J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
 RA Jahn R., Niemann H.;
 RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
 RN J. Biol. Chem. 269:1617-1620(1994).
 RP [14]
 RP MUTAGENESIS OF GLU-261; PHE-265 AND TYR-365.
 RX MEDLINE=21556941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
 RA Righi M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;
 RT "Site-directed mutagenesis identifies active-site residues of the
 RL light chain of botulinum neurotoxin type A.";
 RN Biochem. Biophys. Res. Commun. 288:1231-1237(2001).
 RP [15]
 RP X-RAY CRYSTALLOGRAPHY (3.3 ANGSTROMS).
 RX MEDLINE=98455071; PubMed=9783750;
 RA Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
 RT "Crystal structure of botulinum neurotoxin type A and implications for
 RL toxicity.";
 RN Nat. Struct. Biol. 5:898-902(1998).
 CC -!- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
 CC binds with high affinity to peripheral neuronal presynaptic
 CC membrane, is then internalized by receptor-mediated endocytosis.
 CC The C-terminus of the heavy chain (H) is responsible for the
 CC adherence of the toxin to the cell surface while the N-terminus
 CC mediates transport of the light chain from the endocytic vesicle
 CC to the cytosol. After translocation, the light chain (L)
 CC hydrolyzes the 197-Gln-1-Arg-198 bond in SNAP-25, thereby blocking
 CC neurotransmitter release. Inhibition of acetylcholine release
 CC results in flaccid paralysis, with frequent heart or respiratory
 CC failure.
 CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -!- COFACTOR: Binds 1 zinc ion per subunit.
 CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the
 CC treatment of strabismus and blepharospasm associated with dystonia
 CC and cervical dystonia. Also used for the treatment of hemifacial
 CC spasm and a number of other neurological disorders characterized
 CC by abnormal muscle contraction.
 CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -!- SIMILARITY: Belongs to the peptidase M27 family.
 CC -!- DATABASE: NAME=BOTOX product information web site;
 CC WWW="http://www.botox.com/site/".
 CC -!- DATABASE: NAME=Protein Spotlight; NOTE=Issue 19 of February 2002;
 CC WWW="http://www.expasy.org/spotlight/back issues/spot019.shtml".
 CC -!- This Swiss-Prot entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.
 CC -----
 CC EMBL; X52066; CAA36289.1; -; Genomic DNA.
 CC EMBL; M30196; AAA23262.1; -; Genomic DNA.

RESULT 12

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Q7B8V4_CLOBO
ID Q7B8V4_CLOBO PRELIMINARY; PRT; 1296 AA.
AC 28-FEB-2003 (Rel. 41, Created)
DT 28-FEB-2003 (Rel. 41, Last sequence update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)
DE Bontolysin A (BOTOX) [Contains: Botulinum neurotoxin A light-
DE chain; Botulinum neurotoxin A heavy-chain].
GN Name=botA; Synonyms=atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / Kyoto-F;
RX MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;
RA Williams A., East A.K., Lawson P.A., Collins M.D.;
RT "Sequence of the gene coding for the neurotoxin of Clostridium
RT botulinum type A associated with infant botulism: comparison with
RT other clostridial neurotoxins.";
RL Curr. Microbiol. 46:345-352(2003).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / Kyoto-F;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
CC -I- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-|-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure (By similarity).
CC -I- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -I- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H) (By similarity).
CC -I- SUBCELLULAR LOCATION: Secreted.
CC -I- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, Cl, D, E, F, and G.
CC -I- SIMILARITY: Belongs to the peptidase M27 family.
CC -----
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL Outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC -----
CC EMBL; X73423; CAAS1824.1; -; Genomic DNA.
CC EMBL; X87974; CAA61234.1; -; Genomic DNA.
CC PIR; I40645; I40645.
CC PDB; 1E1H; X-ray; A/C-9-249, B/D=250-415.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR006025; Pept M. Zn BS.
CC InterPro; IPR000395; Peptidase M27.
CC InterPro; IPR012928; Toxin recpt bd_N.
CC InterPro; IPR012500; Toxin_trans.
CC Pfam; PF01742; Peptidase_M27; 1.
CC Pfam; PF07953; Toxin_R_bind_N; 1.
CC Pfam; PF07952; Toxin_trans; 1.
CC PRINTS; PR00760; BONTOLYSIN.
CC ProDom; PD001963; Botulinum; 1.
Q45894; P77780;
AC 28-FEB-2003 (Rel. 41, Created)
DT 28-FEB-2003 (Rel. 41, Last sequence update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)
DE Bontolysin A (BOTOX) [Contains: Botulinum neurotoxin A light-
DE chain; Botulinum neurotoxin A heavy-chain].
GN Name=botA; Synonyms=atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / Kyoto-F;
RX MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;
RA Williams A., East A.K., Lawson P.A., Collins M.D.;
RT "Sequence of the gene coding for the neurotoxin of Clostridium
RT botulinum type A associated with infant botulism: comparison with
RT other clostridial neurotoxins.";
RL Curr. Microbiol. 46:345-352(2003).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / Kyoto-F;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
CC -I- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-|-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure (By similarity).
CC -I- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -I- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H) (By similarity).
CC -I- SUBCELLULAR LOCATION: Secreted.
CC -I- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, Cl, D, E, F, and G.
CC -I- SIMILARITY: Belongs to the peptidase M27 family.
CC -----
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL Outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC -----
CC EMBL; X73423; CAAS1824.1; -; Genomic DNA.
CC EMBL; X87974; CAA61234.1; -; Genomic DNA.
CC PIR; I40645; I40645.
CC PDB; 1E1H; X-ray; A/C-9-249, B/D=250-415.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR006025; Pept M. Zn BS.
CC InterPro; IPR000395; Peptidase M27.
CC InterPro; IPR012928; Toxin recpt bd_N.
CC InterPro; IPR012500; Toxin_trans.
CC Pfam; PF01742; Peptidase_M27; 1.
CC Pfam; PF07953; Toxin_R_bind_N; 1.
CC Pfam; PF07952; Toxin_trans; 1.
CC PRINTS; PR00760; BONTOLYSIN.
CC ProDom; PD001963; Botulinum; 1.
Query Match 49.0%; Score 1120.5; DB 2; Length 1296;
Best Local Similarity 49.4%; Pred. No. 2.6e-58;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;
QY 2 YTNDKILLFNKLYKKIKONSIIDMRVKNKFTDISYGSNISINGDVVIYSTNRNQFG 61
DB 856 YVDNQRLSTTEYIKNIINTSIILNRYESNHLIDLSYASKINIGSKVNPDPIDKNQIQ 915
QY 62 IYSSKPSVNIQNDIINRGYQNFSTFVWRIPKVPKNVNLNNEYTIIDICIRNNNSGW 121
DB 916 LFNLESSKIEVLKNAIVNSMYENFSTFVWRIPKVPKFNLSLNEYTIINCM-ENNSGW 974
QY 122 KISLNYNKKIITLQDTAGNKKQVFNVTQMTISIDYINKWIFVTITNRLGNSRIYNGN 181
DB 975 KVSILNYGEIITLQDTQBIKQVVFVKYSQMINISIDYINRWIFVTITNRLNNSKIYNGR 1034
QY 182 LIDEKTSINLGDIIHVSNIILPKIVGCDNT-RYVGIRYKVPDTELKGTETLYSDEPD 240
DB 1035 LIDQKPSINLGNIIHASNNIMFKDQCDRTHRYIKWIFNLPDKELNEIKDLVDNQSNS 1094
QY 241 SILKDFWGNLYLLNRYKRYLLMLLRDTSKITSQNS----NFLNINQQRGVYQKPNFNSNRL 296
DB 1095 GILKDFGWDYLYQDKPYMLNLYDPNKVYDVNNVVGIRGYMYLKGPRGSVMVTNIYLNSSL 1154
QY 297 YTGVEVIRKNGSTDSNTDNFVRKNDLAYINVDVRDVEVRLYADISIAKPEKIKIIRT 356
DB 1155 YRGTKFIKKYAS---GNKDNIVRNNDRVINYVNVVKNKEYRLATNASQAGVEKILSALEI 1211
QY 357 SNSNNSIGQIIVMDS-----IGNNCTWNFNNGNGLLGFPHNN-----LVASSWYNN 407
DB 1212 PDVGN-LSQVVMKSKNDQGTNCKMNLQDNNGNDIGFIFGHFNIAKLVASNWNRYQ 1270
QY 408 IRKNTSNGCFWFSISKHGWQE 430
DB 1271 IERSRTLGSWEFIPVDDGNGE 1293
RESULT 13
BXA2_CLOBO
ID _BXA2_CLOBO STANDARD; PRT; 1295 AA.
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DR PROSITE: PS00142; ZINC_PROTEASE; FALSE_NEG.
 KW 3D-structure: Hydrolase, Metal-binding, Metalloprotease; Neurotoxin;
 KW Process; Toxin; Transmembrane; Zinc.
 FT INIT_MET 0 0 By similarity.
 FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
 FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
 FT TRANSMEM 626 646 Potential.
 FT TRANSMEM 655 675 Potential.
 FT ACT_SITE 223 223 By similarity.
 FT METAL 222 222 Zinc (catalytic) (By similarity).
 FT METAL 226 226 Zinc (catalytic) (By similarity).
 FT DISULFID 429 453 Interchain (between light and heavy chains) (By similarity).
 FT DISULFID 1234 1279 By similarity.
 FT SEQUENCE 1295 AA; 149280 MW; 5DA04A13D98D6372 CRC64;
 Query Match 47.7%; Score 1092.5; DB 1; Length 1295;
 Best Local Similarity 48.6%; Pred. No. 1.2e-56;
 Matches 216; Conservative 76; Mismatches 133; Indels 19; Gaps 7;
 QY 2 YTNDKILLYFNKLYKKIKDNLDMRYENKFDIDISGYSNISINGVVIYSTRNQFG 61
 DB 855 YVDNKKLLSTETIKYIKNVNTSILSVYKDDLDLSRYGAKINIGRVVYDSIDKQIK 914
 QY 62 IYSSKPSVNIQAQNDIYNGRYQNFSTFWRIKPKYFNKVLNNEYTIIDCIRNNNSGW 121
 DB 915 LINESSTIEVLKNAIVNSMYENFSTFWIKPKYFSKINLNNEYTIINCI-ENNSGW 973
 QY 122 KISLNKIIWTLODTAGNNQKLVNYTQMISIDYINKWIFVTITNNRLGNSRIYINGN 181
 DB 974 KVSLEYGEIITLQDNKQNIQVVFVKSQVWNISDYINRWIFVTITNNRLTKSKIYINGR 1033
 QY 182 LIDEKSIENLGDHIVSDNLFKIVGCDN-TRYVGIRYKVPDTLGLKTEIETLYSDEPDP 240
 DB 1034 LIDQKPIISNLGNIHASNKIMFKLDGCRDPRYIMIKYFNLFDEKELNEKEIKDLYDSQNS 1093
 QY 241 STLKDFWGNLYLYNRYLLNLLRTDKSITONS----NFLNINQORGVYQKPNIFSNTRL 296
 DB 1094 GILKDFWGNLYQDKPYTLMNLFDPNKYVDVNNIGIRGYMYLKGRGVSVTNLYLSTL 1153
 QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEKIKLIRT 356
 DB 1154 YEGTKFIKKYAS---GNEDNIVNRNDRVYINNVVKNKEYRLATNASQAGVEKILSALEI 1210
 QY 357 SNSNLSGQIIVMDS-----IGNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407
 DB 1211 PDVGN-LSQVVMKSKDDQGIIRNCKMNLQDNNGNDIGFPHLYDNIATKLVASNNYNRQ 1269
 QY 408 IRKNTSSNGCFWFSFISKEHGWQEN 431
 DB 1270 VGKASRTFGCSWEFIPVDDGWGES 1293

RESULT 14
 Q58GH1_CLOBO PRELIMINARY; PRT; 1296 AA.
 AC Q58GH1;
 DT 10-MAY-2005 (TrEMBLrel. 30, Created)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last sequence update)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last annotation update)
 DE Type A2 botulinum neurotoxin.
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN NUCLEOTIDE SEQUENCE.
 RC STRAIN=PRI-H1A2;
 RA Johnson E.A., Tepp W.H., Bradshaw M., Gilbert R.J., Cook P.E.,
 RA McIntosh E.D.G.;
 RT "Characterization of Clostridium botulinum Strains Associated with an
 RT Infant Botulism Case in the United Kingdom."
 RL J. Clin. Microbiol. 0:0-0(2005).

RN NUCLEOTIDE SEQUENCE.
 RC STRAIN=PRI-H1A2;
 RA Smith T.J., Lou J., Geren I., Forsyth C., Tsai R., Tepp W.H.,
 RA Bradshaw M., Johnson E.A., Smith L.A., Marks J.D.;
 RT "Sequence variation within botulinum neurotoxin serotypes impacts
 RT antibody binding and neutralization."
 RL Submitted (MAR-2005) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AY953275; AAX53156.1; -; Genomic_DNA.
 KW Neurotoxin.
 SQ SEQUENCE 1296 AA; 149410 MW; 6F12E7BF28ED69D1 CRC64;
 Query Match 47.7%; Score 1092.5; DB 2; Length 1296;
 Best Local Similarity 48.6%; Pred. No. 1.2e-56;
 Matches 216; Conservative 76; Mismatches 133; Indels 19; Gaps 7;
 QY 2 YTNDKILLYFNKLYKKIKDNLDMRYENKFDIDISGYSNISINGVVIYSTRNQFG 61
 DB 856 YVDNKKLLSTETIKYIKNVNTSILSVYKDDLDLSRYGAKINIGRVVYDSIDKQIK 915
 QY 62 IYSSKPSVNIQAQNDIYNGRYQNFSTFWRIKPKYFNKVLNNEYTIIDCIRNNNSGW 121
 DB 916 LINESSTIEVLKNAIVNSMYENFSTFWIKPKYFSKINLNNEYTIINCI-ENNSGW 974
 QY 122 KISLNKIIWTLODTAGNNQKLVNYTQMISIDYINKWIFVTITNNRLGNSRIYINGN 181
 DB 975 KVSLEYGEIITLQDNKQNIQVVFVKSQVWNISDYINRWIFVTITNNRLTKSKIYINGR 1034
 QY 182 LIDEKSIENLGDHIVSDNLFKIVGCDN-TRYVGIRYKVPDTLGLKTEIETLYSDEPDP 240
 DB 1035 LIDQKPIISNLGNIHASNKIMFKLDGCRDPRYIMIKYFNLFDEKELNEKEIKDLYDSQNS 1094
 QY 241 STLKDFWGNLYLYNRYLLNLLRTDKSITONS----NFLNINQORGVYQKPNIFSNTRL 296
 DB 1095 GILKDFWGNLYQDKPYTLMNLFDPNKYVDVNNIGIRGYMYLKGRGVSVTNLYLSTL 1154
 QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEKIKLIRT 356
 DB 1155 YEGTKFIKKYAS---GNEDNIVNRNDRVYINNVVKNKEYRLATNASQAGVEKILSALEI 1211
 QY 357 SNSNLSGQIIVMDS-----IGNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407
 DB 1212 PDVGN-LSQVVMKSKDDQGIIRNCKMNLQDNNGNDIGFPHLYDNIATKLVASNNYNRQ 1270
 QY 408 IRKNTSSNGCFWFSFISKEHGWQEN 431
 DB 1271 VGKASRTFGCSWEFIPVDDGWGES 1294
 RESULT 15
 Q79AH9_CLOBO PRELIMINARY; PRT; 366 AA.
 AC Q79AH9;
 DT 05-JUL-2004 (TrEMBLrel. 27, Created)
 DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
 DT 05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
 DE Botulinum neurotoxin type F (Fragment).
 GN Name=BoNT/F;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN NUCLEOTIDE SEQUENCE.
 RC STRAIN=type F;
 RC MEDLINE=94013372; PubMed=8408542;
 RA Campbell K.D., Collins M.D., East A.K.;
 RT "Gene probes for identification of the botulinum neurotoxin gene and
 RT specific identification of neurotoxin types B, E, and F";
 RL J. Clin. Microbiol. 31:2255-2262(1993).
 RN NUCLEOTIDE SEQUENCE.
 RC STRAIN=type F;

RA Campbell K.D.;
RL Submitted (JAN-1993) to the EMBL/GenBank/DBJ databases.
DR EMBL; X70821; CAA50152.1; -; Genomic_DNA.
DR HSP; P04958; IA8D.
DR GO; GO:0009405; P:pathogenesis; IEA.
KW Neurotoxin.
FT NON_TER 1
FT NON_TER 366
SQ SEQUENCE 366 AA; 43136 MW; 45A132B235D7E640 CRC64;

Query Match 35.7%; Score 816; DB 2; Length 366;
Best Local Similarity 100.0%; Pred. No. 8.3e-41;
Matches 153; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKFIDISGYGSNISINGDVYIYSTNRNQF 60
Db 214 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKFIDISGYGSNISINGDVYIYSTNRNQF 273
Qy 61 GIYSSKPESEVNIAQNNDIIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 120
Db 274 GIYSSKPESEVNIAQNNDIIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 333
Qy 121 WKISLNYKIIWTIQTAGNKKLVFNVTOMIS 153
Db 334 WKISLNYKIIWTIQTAGNKKLVFNVTOMIS 366

Search completed: March 2, 2006, 00:46:23
Job time : 224 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:46:47 ; Search time 53 seconds
(without alignments)
672.325 Million cell updates/sec

Title: US-08-981-087B-1
Perfect score: 2288
Sequence: 1 SYTNDKILLYFNKLYKKIK.....TSSNGCFWFSFKSHGQWEN 431

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 572060 seqs, 82675679 residues

Total number of hits satisfying chosen parameters: 572060

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued Patents AA:*
1: /cgn2_6/ptodata/1/iaa/5 COMB.pep.*
2: /cgn2_6/ptodata/1/iaa/6 COMB.pep.*
3: /cgn2_6/ptodata/1/iaa/H COMB.pep.*
4: /cgn2_6/ptodata/1/iaa/ECTUS COMB.pep.*
5: /cgn2_6/ptodata/1/iaa/RE COMB.pep.*
6: /cgn2_6/ptodata/1/iaa/backfiles1.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	1120.5	49.0	1296	1	US-08-480-604A-28
2	1120.5	49.0	1296	1	US-08-405-496A-28
3	1120.5	49.0	1296	2	US-08-915-136-28
4	1120.5	49.0	1296	2	US-09-084-517-28
5	1113.5	48.7	438	1	US-08-480-604A-23
6	1113.5	48.7	438	1	US-08-405-496A-23
7	1113.5	48.7	438	2	US-09-915-136-23
8	1113.5	48.7	438	2	US-09-084-517-23
9	1113.5	48.7	462	1	US-08-480-604A-26
10	1113.5	48.7	462	1	US-08-405-496A-26
11	1113.5	48.7	462	2	US-08-915-136-26
12	1113.5	48.7	462	2	US-09-084-517-26
13	1092.5	47.7	848	2	US-10-360-101-219
14	1019.5	44.6	382	2	US-09-288-326A-9
15	1019.5	44.6	382	2	US-09-548-409B-9
16	789	33.6	1290	2	US-10-360-101-220
17	676.5	29.6	1169	2	US-09-255-829-20
18	556	24.3	452	1	US-07-618-312A-2
19	556	24.3	452	1	US-08-280-228-2
20	553	24.2	452	1	US-07-618-312A-4
21	553	24.2	452	1	US-08-280-228-4
22	553	24.2	618	1	US-08-868-381A-5
23	553	24.2	853	2	US-08-913-880C-17
24	553	24.2	858	2	US-08-913-880C-16
25	553	24.2	860	2	US-08-913-880C-15
26	553	24.2	862	2	US-08-913-880C-14
27	553	24.2	865	2	US-08-913-880C-13

28	553	24.2	866	2	US-08-913-880C-12	Sequence 12, Appl
29	553	24.2	874	2	US-08-913-880C-11	Sequence 11, Appl
30	553	24.2	875	2	US-08-913-880C-10	Sequence 10, Appl
31	553	24.2	1315	2	US-08-913-880C-1	Sequence 1, Appl
32	524	22.9	452	1	US-08-110-786A-8	Sequence 8, Appl
33	281.5	12.3	141	2	US-09-465-276-1	Sequence 1, Appl
34	277.5	12.1	140	2	US-08-446-114A-22	Sequence 22, Appl
35	151.5	6.6	2184	2	US-09-417-485D-8	Sequence 8, Appl
36	149.5	6.5	912	2	US-09-134-001C-2993	Sequence 2993, Ap
37	149	6.5	2710	1	US-08-480-604A-6	Sequence 6, Appl
38	149	6.5	2710	1	US-08-405-496A-6	Sequence 6, Appl
39	149	6.5	2710	2	US-08-915-136-6	Sequence 6, Appl
40	149	6.5	2710	2	US-08-957-310-6	Sequence 6, Appl
41	149	6.5	2710	2	US-10-011-366-6	Sequence 6, Appl
42	149	6.5	2710	2	US-09-084-517-6	Sequence 6, Appl
43	149	6.4	1381	2	US-09-662-254B-20	Sequence 20, Appl
44	143	6.2	1004	2	US-09-206-942-57	Sequence 57, Appl
45						

ALIGNMENTS

RESULT 1
US-08-480-604A-28
; Sequence 28, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027

```

; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-480-604A-28

Query Match 49.0%; Score 1120.5; DB 1; Length 1296;
Best Local Similarity 49.4%; Pred. No. 9.7e-83;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNDKILLYPNKLYKKIKNSILDMRYENKFKIDISGYGNSISINGDVVIYSTRNQFG 61
DB 856 YVDNQRLSTFTTEYIKNIINTSILNLRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPSEVNIQNDIYNGRYQNFISFWIRIPKYNKVNLNNEYTIIDCIRNNNSGW 121
DB 916 LFNLESSKIEVILKNAIVNMYENFSTFWIRIPKYNFISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNYNKIITWLODTAGNOKLVNVTOMISIDYINKWIFVTITNNRLNSRIYINGN 181
DB 975 KVSUNYGEIITWLOTOEIKQRVVFYKYSQMINISDYINRWIFVTITNNRLNSKIYINGR 1034
QY 182 LIDEKSIISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFDELGKTEIETLYSDPDP 240
DB 1035 LIDQKPIISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFDELGKTEIETLYSDPDP 240
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DB 1095 GILKDFWGDYLYQDKPYMLNLYDPNKKYVDVNVNGIRGYMYLKGPRGSVMTTNIYLNSSL 1154
QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEKIKLIRT 356
DB 1155 YRGTKFIKKYAS---GNKDNIVNRNDRVYINNVVVKKEYLATNASQAGVEKILSALEI 1211
QY 357 SNSNNSLQGITVMS-----IGNNCTNPNQNNNGNIGLLGFHSNN-----LVASSWYNN 407
DB 1212 PDVGN-LSQVVVMSKNDQGITNCKMQLDNGNDIGFIFGHQFNINIAKLIVASWYNNRQ 1270
QY 408 IRKNTSSNGCFWFSFISKEHGWQE 430
DB 1271 IERSRSLGCSWEFIPVDDGWGE 1293

RESULT 2
US-08-405-496A-28
; Sequence 28, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; TITLE OF INVENTION: NEUROTOXIN
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
; FILING DATE: 16-MAR-1995

; CLASSIFICATION: 424
; PRIOR APPLICATION DATA: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-405-496A-28

Query Match 49.0%; Score 1120.5; DB 1; Length 1296;
Best Local Similarity 49.4%; Pred. No. 9.7e-83;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNDKILLYPNKLYKKIKNSILDMRYENKFKIDISGYGNSISINGDVVIYSTRNQFG 61
DB 856 YVDNQRLSTFTTEYIKNIINTSILNLRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPSEVNIQNDIYNGRYQNFISFWIRIPKYNKVNLNNEYTIIDCIRNNNSGW 121
DB 916 LFNLESSKIEVILKNAIVNMYENFSTFWIRIPKYNFISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNYNKIITWLODTAGNOKLVNVTOMISIDYINKWIFVTITNNRLNSRIYINGN 181
DB 975 KVSUNYGEIITWLOTOEIKQRVVFYKYSQMINISDYINRWIFVTITNNRLNSKIYINGR 1034
QY 182 LIDEKSIISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFDELGKTEIETLYSDPDP 240
DB 1035 LIDQKPIISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFDELGKTEIETLYSDPDP 240
QY 241 SILKDFWGNLYLNKRYLLNLLRTDKSITQNS-----NFLNINQQRGVYQKPNIFSNTRL 296
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QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEKIKLIRT 356
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QY 357 SNSNNSLQGITVMS-----IGNNCTNPNQNNNGNIGLLGFHSNN-----LVASSWYNN 407
DB 1212 PDVGN-LSQVVVMSKNDQGITNCKMQLDNGNDIGFIFGHQFNINIAKLIVASWYNNRQ 1270
QY 408 IRKNTSSNGCFWFSFISKEHGWQE 430
DB 1271 IERSRSLGCSWEFIPVDDGWGE 1293

RESULT 3
US-08-915-136-28
; Sequence 28, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.

```



```

APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-28

Query Match 49.0%; Score 1120.5; DB 2; Length 1296;
Best Local Similarity 49.4%; Pred. No. 9.7e-83;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNKILLYFNKLYKKIKONSLDMRYNNKPFIDISGYGNSISGVDVYIYSTNRNQG 61
DB YDNQKLLTFTTEYIKNIINTSILNRYESNLHLDLSRVASKINIGSKVNFDPIDKNOIQ 915
QY 62 IYSSKPEYVNIQNDIIRYQNFISFWRIPKYPKYNLNNETIITDCIRNNNSGW 121
DB LFNLESSKIEVLKNAIVNMYENFSTFWIRIPKYPNSISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNTNKLITWLDQTAGNKKLVFYTOTMISDSYVINKWIFVTITNNLGSRIYNGN 181
DB KVSLSNYGEIITWLDQTEIKQKRVYFKYSQMINISDYINRWIFVTITNNLNSKIYNGR 1034
QY 182 LIDEKISNLGDIHVSNDILFKLVGNDT-RYVGIRYFKVFDTELKTEIETLYSDEPOP 240
DB LIDOKPISNLGNTHASNIMFKDGCGRDTHRYIWIIFNLFDKELNEKEIKLDYDQNS 1094

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241 SILKDFAGNYLLYKRYIILNLRDKSITONS-----NFLNINQQRGVYQKPNFNTRL 296
1095 GILKDFWGDYLDYKQYVYMLNLYDPNKYVDVNNVGIRGYMLKGRGVSVMTTIYNLSSL 1154
297 YTGVEVILIRKNGSTDISNTDNFVRKNDLAVINVVDRDVEYRLYADISIAKPEKIIKLRT 356
1155 YRGTKFIIRKIYAS---GNKNIVRNNDRVINVVKNKEYRLATNVSQAGVEKILSALEI 1211
357 SNSNNSLGQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LVASSWYNN 407
1212 PDVGN-LSQVVMKSKNDQGITNKCKMNLQDNGNDIGFHFQFNNAIKLVASNNWYNRQ 1270
408 IRKNTSSNGCFWFSFISKEHQWE 430
1271 IERSRTLGCWBFIPVDDGWE 1293

RESULT 4
US-09-084-517-28
Sequence 28, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: CARROLL, PETER G.
REGISTRATION NUMBER: 32,837
REFERENCE/DOCKET NUMBER: OPHD-01610
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-084-517-28

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Query Match      49.08; Score 1120.5; DB 2; Length 1296;
Best Local Similarity 49.48; Pred. No. 9.7e-83;
Matches 219; Conservative 127; Mismatches 127; Indels 19; Gaps 7;

Qy 2 YTNDKILILFNKLYKKIKNSILDMRYENKFKIDISGYSNISINGDVYIYSTRNQFG 61
Db 856 YVDNQRLLSFTFEYIKNIINTSILNLAYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
Qy 62 IYSSKPSVNAQNNDIYNGRYQNFPSISFWIRIPKYPKVNLMNNEYTIIDCTRNNNSGW 121
Db 916 LFNLESSKIEVILKNAIVNSMYENFSTFWIRIPKYPKFNISLNNEYTIINCW-ENNSGW 974
Qy 122 KISLNNYKNIWTLQDTAGNKKLVFNVTQMTISIDYINKWIFVTITNNRLGNSRIYINGN 181
Db 975 KVSILNGEIIWTLQDTQEIQRVVFVYKYSQMINISDYINRWIFVTITNNRLNNSKIYINGR 1034
Qy 182 LIDKSIISNLGDIHVSNILFKIVGNCNDT-RYVGIRYFKVFDTELKTEIETIYSDRDPDP 240
Db 1035 LIDQKPSISNLGNIHASNNIMFKLDGCRDTHRYIKYFNFLDKELNEKEIKOLYDNQNS 1094
Qy 241 SILKDFWGNVLLNKRYYLLNLLRTDKSITONS-----NFLNINOQRGVYQKPNIPSTR 296
Db 1095 GILKDFWGDVLYQDKPYMLNLYDPNKYVDVNVNGIRGYMYLKGPRGSMVTNIIYLNSSL 1154
Qy 297 YTGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDRDVEYRLYADISIAKPEIKILIRT 356
Db 1155 YRGKFKIILKYAS---GNKONIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 1211
Qy 357 SNSNLSLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LVASSWYIYN 407
Db 1212 PDVGN-LSQVVMKSKNDQGITNCKKYNLQDNNGNDIGFIFGHQFNIAKLIVASWYNRQ 1270
Qy 408 IRKNTSSNGCFWSFISKEHGWQE 430
Db 1271 IERSRTLGCSWEFIPVDGOWGE 1293

RESULT 5
US-08-480-604A-23
; Sequence 23, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995

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; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-480-604A-23

Query Match      48.78; Score 1113.5; DB 1; Length 438;
Best Local Similarity 49.98; Pred. No. 8.5e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

Qy 8 LILYFNKLYKKIKNSILDMRYENKFKIDISGYSNISINGDVYIYSTRNQFGIYSSKP 67
Db 4 LLSFTFEYIKNIINTSILNLAYESNHLIDLSRYASKINIGSKVNFDPIDKQIQLFNLES 63
Qy 68 SEVNIAQNNDIYNGRYQNFPSISFWIRIPKYPKVNLMNNEYTIIDCTRNNNSGWKISLNY 127
Db 64 SKTEVILKNAIVNSMYENFSTFWIRIPKYPKFNISLNNEYTIINCW-ENNSGWKYSLNY 122
Qy 128 NKIIWTLQDTAGNKKLVFNVTQMTISIDYINKWIFVTITNNRLGNSRIYINGNLIIDEKS 187
Db 123 GEIIWTLQDTQEIQRVVFVYKYSQMINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKP 182
Qy 188 ISNLGDIHVSNILFKIVGNCNDT-RYVGIRYFKVFDTELKTEIETIYSDRDPDPILKDF 246
Db 183 ISNLGNIHASNNIMFKLDGCRDTHRYIKYFNFLDKELNEKEIKOLYDNQNSGILKDF 242
Qy 247 WGNLYLLNKRYYLLNLLRTDKSITONS-----NFLNINOQRGVYQKPNIPSTRNLTGYEV 302
Db 243 WGDYLYQDKPYMLNLYDPNKYVDVNVNGIRGYMYLKGPRGSMVTNIIYLNSSLYRGTKF 302
Qy 303 IIRKNGSTDISNTDNFVRKNDLAYINVVDRDVEYRLYADISIAKPEIKILIRTSNNS 362
Db 303 IIRKNGSTDISNTDNFVRKNDLAYINVVDRDVEYRLYADISIAKPEIKILIRTSNNS 362
Qy 363 LGQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LVASSWYIYNIRKNTS 413
Db 359 LSQVVMKSKNDQGITNCKKYNLQDNNGNDIGFIFGHQFNIAKLIVASWYNRQIERSSR 418
Qy 414 SNGCFWSFISKEHGWQE 430
Db 419 TLGCSWEFIPVDGOWGE 435

RESULT 6
US-08-405-496A-23
; Sequence 23, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; TITLE OF INVENTION: NEUROTOXIN
; NUMBER OF SEQUENCES: 30

```

CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: USA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/405,496A
FILING DATE: 16-MAR-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-23
Query Match 48.7%; Score 1113.5; DB 1; Length 438;
Best Local Similarity 49.9%; Pred. No. 8.5e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;
QY 8 LILYFNKLYKKIKONSLIDMYENKFKIDISGYSNISINGDVYIYSTNRNQFGIYSSKP 67
DB 4 LLSTFEYKNTINTSILNRLVESNHLIDLSRYASKINSGKVNFPDPIDKQIQLFNLES 63
QY 68 SEWIAQNNDIYNGRYQNFSTFWIRPKYFNKVLNNEYTIIDICRNNNSGKISLNY 127
DB 64 SKIEVLKQALVYNSVNFSTFWIRPKYFNKVLNNEYTIIDICRNNNSGKISLNY 122
QY 128 NKIITLQTAGNQKLVNFTOMISIDYINKWIFVTITNRLNLSRIYINGNLIDKES 187
DB 123 GSIITLQTBQIKORVFKYSQMINISDYINRWIFVTITNRLNLSRIYINGNLIDKOP 182
QY 188 ISNLGDIHVSNDILPKIVGCNDT-RVGVIRYKVFDETLGKTEIETLYSDPDPSILKDF 246
DB 183 ISNLGNHASNIMFKLDCRTHRYIWKYNLFDKELNEKEIKLDYDNQNSGILKDF 242
QY 247 WGNLYLLNRYLLNLLRTDKSITQNS----NPLNINQORGVYQKPNFSTNRLTYGVGV 302
DB 243 WGDYLYQDPYVYMLNLYDENKYVDVNNVGVIRGVMYKLGPRGVMVTNLYNLSLRYGTFK 302
QY 303 IIRKNGSTDISDNTDFVRQNDLAYINVDVDVEYRLYADISIAKPEKIKLRTSNNS 362
DB 303 IIRKVAS---GNKNDIVRNRDRYINVVYVKNKEYRLATNASQAGVEKILSALEIPDVGN- 358
QY 363 LQGIIVWDS-----IGNCTMFPNNNGNIGLGFHSNN-----LVASSWYNNIRKNTS 413

Db 359 LSOVVVWKSNDQGITNKKCKQNLQNDNNDIGFIGHQFNNAKLVASWYNRQIERSSR 418
QY 414 SNGCFWFSFISKEHGWOE 430
Db 419 TLGCSWEFIPVDDGWE 435
RESULT 7
US-08-915-136-23
Sequence 23, Application US/08915136
Patent No. 6290960
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-23
Query Match 48.7%; Score 1113.5; DB 2; Length 438;
Best Local Similarity 49.9%; Pred. No. 8.5e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

QY	8	LILYPNKLYKXIKONSIILDMRYENKNFFIDISGYSGNISINDGVYIYSTNRNQFIYSSKP	67
Db	4	LLSTFTEYIKNIINTSIUNLRYESNHLIDLSRYASKINIGSKYVFOPIDKNQIQLPNLS	63
QY	68	SEVNTIAQNNDIINYGRYONFESISFWIRPKPKYFNKVLNNVETIIDICIRNNNSQWKISLNY	127
Db	64	SKIEWILKNAUVINSMYENFSTSWIRPKPKFNSISUNNETIINCW--ENNSQWKVSLNY	122
QY	128	NKIIWTLODTAGNNOKLVFNTQMISSDYSINKWIFVTITNNRLGNSRIYINGNLIDEKS	187
Db	123	GBIIWTLODTQBIKORVVVKYSQMINISDYSINRWIFVTITNNRLNNSKIYINGRLIDQKP	182
QY	188	ISNLGDIHVSDNILFKIVGCHDT-RYVGIRPKPKYFDTTELCTHETIYLSDEPPDSILKDP	246
Db	183	ISNLGNIHASNNIMFKLDGCDRTHRYIWKYFNLFIDKELMEKEIKOLYDNQNSGLIKDP	242
QY	247	WGNLYLLNRYLLMLLRITDKSITQNS----NFLNINQOQGVYQVKNPISNTRLYTGVBV	302
Db	243	WGDYLOYDKPYPMNLNLYDPNKVVDVNVGIRGYMYLKGPRGSVMTNIIYLNSSLRYGTKF	302
QY	303	IIRKNGSTDISNTDNFVRKNDLAYINVDRODVEYRLYADISIAKPKIKLIKRTSNNSNS	362
Db	303	IIKKYAS---GNKONIVRNNDRVYINVVVKNKYRLATNASOAGVEKILSALEIPDVGN-	358
QY	363	LGQIITVMS-----IGNNCTNWFQNNNGSINGLAGPHSNN-----LVASSWYNNIKNTIS	413
Db	359	LSQVVMVMSKNDQGITNCKNQLQNNNDIGFTGFHFQFNIAKLIVASNNWYNRQIERSR	418
QY	414	SNCGCFWSPISKEHGWOE	430
Db	419	TLCGSWEFIPVDGHWGE	435

RESULT 8

US-09-084-517-23
; Sequence 23, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/084,517
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791

```

; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-084-517-23
;
Query Match 48.7%; Score 1113.5; DB 2; Length 438;
Best Local Similarity 49.9%; Pred. No. 8.5e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7
;
QY      8 LILVFNKLYKKIKDMSLDWRVYENKPKDISGVGSNISINGDVVIYSTNRNQFGVSKPK 67
DB      4 LLSTFTYEYKNIINTSLNLRYSNHLIDLSRYASKINIGSKVNFDPIDKMQIQLFNLES 63
;
QY     68 SEVNIAQNNDIIYNGRYQNFSGISFWVRIPKPYFNKVLNNEYYTIIDCIINNNSNGWKISLNY 127
DB     64 SKIEVLKNAIVNMYSENFSTSFWRIPKPYFNSISLNNEYTIINCM-ENNSGWKVSLNY 122
;
QY     128 NKLIWTLODTAGNKKLVNPTQWISDSYINKWIFVTITNRLNGSRIYYINGNLIDSKS 187
DB     123 GEIITWLODQEIQRVYFKYSQMINISDYINRWIFVTITNRLNNSKIYYINGRLIDQKP 182
;
QY     188 ISNLGDIHVSDNILFKTVGQNDT-RYVGIRYFKVFDTELGTETETELYSDEPDSILKDF 246
DB     183 ISNLGNIHASNNIMFKLDGCDETHRYIWIKYNFLFDLKEKEIKLDLYDNOSNGSILKDF 242
;
QY     247 WGNLYLLNRYKYYLLNLRDTKSIQNS- ----NFLNINQORGVYQKPIFNSNRLTYGTGVEV 302
DB     243 WGDYLYQDKPYMLNLYDPNKYVDVNVGIRGYMYLKGPRGSVMTTNIYLNSSLVYRGTKF 302
;
QY     303 IIRKNGSTDISNTDNTFVRKNDLAYINVVDRDVEYRLYADISIAKPEKIIKLIRTSNNSNS 362
DB     303 IIRKYAS- --GNKDNIVRNNDRVYINVVVKNEYRLATNASQAGVEKILSALEIPDVGN- 358
;
QY     363 LGOIIVWDS- ----IGNNCTMNFONNNGNIGLLGPHSN- ----LVASSWYYNNIRKNTS 413
DB     359 LSVVVWMSKNKDGITNCKMNLQDNNGNDIGFIFGHQFNNAIKLVASNWTNRQIERSR 418
;
QY     414 SNGCFWSFISKEHWQE 430
DB     419 TLGCSWEFIPVDDGWGE 435

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RESULT 9

RESULT 9
 US-08-480-604A-26
 ; Sequence 26, Application US/08480604A
 ; Patent No. 5736139
 ; GENERAL INFORMATION:
 ; APPLICANT: KINK, JOHN A.
 ; APPLICANT: THALLEY, BRUCE S.
 ; APPLICANT: FADHYE, NISHA V.
 ; APPLICANT: FIRCA, JOSEPH R.
 ; APPLICANT: STAFFORD, DOUGLAS C.
 ; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
 ; PREVENTION OF C. DIFFICILE DISEASE
 ; NUMBER OF SEQUENCES: 32
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: MEDLEN & CARROLL, LLP
 ; STREET: 220 MONTGOMERY STREET, SUITE 2200
 ; CITY: SAN FRANCISCO
 ; STATE: CALIFORNIA
 ; COUNTRY: UNITED STATES OF AMERICA
 ; ZIP: 94104

COMPUTER READABLE FORM:
 MEDIUM TYPE: Floppy disk
 COMPUTER: IBM PC compatible
 OPERATING SYSTEM: PC-DOS/MS-DOS
 SOFTWARE: Patent In Release #1.0, Version #1.30
 CURRENT APPLICATION DATA:
 APPLICATION NUMBER: US/08/480,604A
 FILING DATE: 07-JUN-1995
 CLASSIFICATION: 424
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 08/422,711
 FILING DATE: 14-APR-1995
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 08/405,496
 FILING DATE: 16-MAR-1995
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 08/329,154
 FILING DATE: 25-OCT-1994
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 08/161,907
 FILING DATE: 02-DEC-1993
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 07/985,321
 FILING DATE: 04-DEC-1992
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 07/429,791
 FILING DATE: 31-OCT-1989
 ATTORNEY/AGENT INFORMATION:
 NAME: INGOLIA, DIANE E.
 REGISTRATION NUMBER: 40,027
 REFERENCE/DOCKET NUMBER: OPHD-01763
 TELECOMMUNICATION INFORMATION:
 TELEPHONE: (415) 705-8410
 TELEFAX: (415) 397-8338
 INFORMATION FOR SEQ ID NO: 26:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 462 amino acids
 TYPE: amino acid
 TOPOLOGY: linear
 MOLECULE TYPE: protein
 US-08-480-604A-26

Query Match 48.7%; Score 1113.5; DB 1; Length 462;
 Best Local Similarity 49.9%; Pred. No. 9.2e-83;
 Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

QY 8 LILYFNKLYKIKONSILDMRYENKFKIDISGYGNSINGDVYIYSTNRNQFGIYSSKP 67
 DB 28 LLSTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQLFNLES 87

QY 68 SEVNIAQNNDIYNGRYQNFISFWIRIPKYPKNVNLNEYTIIDCIRNNSGKISLNY 127
 DB 88 SKIEVILKNAIVNMYENFSTFWIRIPKYPKFNLSLNEYTIINCM-ENNSGKVS LNY 146

QY 128 NKIIWTLODTAGNKKLVNTQMSISDYINKWIFVTITNRLNLSRIYINGNLIDKS 187
 DB 147 GBIIWTLODTQBIKQVVFYKYSQMINISDYINRWIFVTITNRLNLSRIYINGNLIDQKP 206

QY 188 ISNLGDIHVSDNILFKVGCNDT-RYVGIRYKFKVDTLTKTEIETLYSDDEPDSILKDF 246
 DB 207 ISNLGNIHASNNIMFKLDCRDTHTYIWKYFNLFKELNEKEIKDLYDNQNSGLKDF 266

QY 247 WGNLYLLNRYKRYLLNLLRTDKSITONS-----NFLINQOGRYQYKPNFSTRITGVGV 302
 DB 267 WGDYLDQKPYPMNLNLDPNKVDVNVNNGIRGVMYKLGPRGVMVTNTIYLSLRYGTGF 326

QY 303 IIRKNGSTDISNTDVRNDLAYINVDVDRDYELVADISTAKPEKIIKLRTSNNS 362
 DB 327 IIRKVAS---GNKDNIVRNDRIYINVVYKNEYRLATNASQAGVEKILSALEIPDVG- 382

QY 363 LGQIIWDS-----IGNCTNPNFQNNNGNIGLGFHNSN-----LVASSWYNNIRKNTS 413
 DB 383 LSQVVMKSKNDQGITNCKMNLQDNGNDIGFIGHQFNNTAKVLVASWYNNRQIERSR 442

QY 414 SNGCFWSFISKEHGWQE 430
 DB 443 TLGCSWEFIPVDGWE 459

RESULT 10
 US-08-405-496A-26
 Sequence 26, Application US/08405496A
 Patent No. 5919665
 GENERAL INFORMATION:
 APPLICANT: WILLIAMS, JAMES A.
 TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
 TITLE OF INVENTION: NEUROTOXIN
 NUMBER OF SEQUENCES: 30
 CORRESPONDENCE ADDRESS:
 ADDRESSEE: MEDLEN & CARROLL, LLP
 STREET: 220 MONTGOMERY STREET, SUITE 2200
 CITY: SAN FRANCISCO
 STATE: CALIFORNIA
 COUNTRY: USA
 ZIP: 94104
 COMPUTER READABLE FORM:
 MEDIUM TYPE: Floppy disk
 COMPUTER: IBM PC compatible
 OPERATING SYSTEM: PC-DOS/MS-DOS
 SOFTWARE: Patent In Release #1.0, Version #1.30
 CURRENT APPLICATION DATA:
 APPLICATION NUMBER: US/08/405,496A
 FILING DATE: 16-MAR-1995
 CLASSIFICATION: 424
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 08/329,154
 FILING DATE: 25-OCT-1994
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 08/161,907
 FILING DATE: 02-DEC-1993
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 07/985,321
 FILING DATE: 04-DEC-1992
 PRIOR APPLICATION DATA:
 APPLICATION NUMBER: US 07/429,791
 FILING DATE: 31-OCT-1989
 ATTORNEY/AGENT INFORMATION:
 NAME: INGOLIA, DIANE E.
 REGISTRATION NUMBER: 40,027
 REFERENCE/DOCKET NUMBER: OPHD-01308
 TELECOMMUNICATION INFORMATION:
 TELEPHONE: (415) 705-8410
 TELEFAX: (415) 397-8338
 INFORMATION FOR SEQ ID NO: 26:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 462 amino acids
 TYPE: amino acid
 TOPOLOGY: linear
 MOLECULE TYPE: protein
 US-08-405-496A-26

Query Match 48.7%; Score 1113.5; DB 1; Length 462;
 Best Local Similarity 49.9%; Pred. No. 9.2e-83;
 Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

QY 8 LILYFNKLYKIKONSILDMRYENKFKIDISGYGNSINGDVYIYSTNRNQFGIYSSKP 67
 DB 28 LLSTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQLFNLES 87

QY 68 SEVNIAQNNDIYNGRYQNFISFWIRIPKYPKNVNLNEYTIIDCIRNNSGKISLNY 127
 DB 88 SKIEVILKNAIVNMYENFSTFWIRIPKYPKFNLSLNEYTIINCM-ENNSGKVS LNY 146

QY 128 NKIIWTLODTAGNKKLVNTQMSISDYINKWIFVTITNRLNLSRIYINGNLIDKS 187
 DB 147 GBIIWTLODTQBIKQVVFYKYSQMINISDYINRWIFVTITNRLNLSRIYINGNLIDQKP 206

188 ISNLGDIHVSNDILFKIVGNDT-RVVGIRYKVFDETELKTEIETLYSDPDPSPILKDF 246
 207 ISNLGDIHVSNDILFKIVGNDT-RVVGIRYKVFDETELKTEIETLYSDPDPSPILKDF 266
 247 WGNLYLNKRYLLNLLRTDKSITONS----NFLNINQORGVYQKPNIFSNTRLYTGVEV 302
 267 WGDYLDYKPYMLNLYDPNPKYVNVNNGIRGYMLKPGSVMTTNIYLNSSLYRGTKF 326
 303 IIRKNGSTDINTDNFVRKNDLAYINVDVDEYRLYADISIAKPEKIILKITSNNS 362
 327 IIRKNGSTDINTDNFVRKNDLAYINVDVDEYRLYADISIAKPEKIILKITSNNS 382
 363 LGQIIYVDS-----IGNCTMNFQNNNGNIGLLGHSNN----LVASSWYNNIRKNTS 413
 383 LSQVVMKSKNDQGITNKCKNLDNNGNDIGFHFQFNIAKLVASNNYNNQIERSSR 442
 414 SNGCFWSFISKEHGWQE 430
 443 TLGCSWEFIPVDDGWGE 459

RESULT 11

US-08-915-136-26
 ; Sequence 26, Application US/08915136
 ; Patent No. 6290960
 ; GENERAL INFORMATION:
 ; APPLICANT: KINK, JOHN A.
 ; APPLICANT: THALLEY, BRUCE S.
 ; APPLICANT: PADHYE, NISHA V.
 ; APPLICANT: FIRCA, JOSEPH R.
 ; APPLICANT: STAFFORD, DOUGLAS C.
 ; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
 ; PREVENTION OF C. DIFFICILE DISEASE
 ; NUMBER OF SEQUENCES: 32
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: MEDLEN & CARROLL, LLP
 ; STREET: 220 MONTGOMERY STREET, SUITE 2200
 ; CITY: SAN FRANCISCO
 ; STATE: CALIFORNIA
 ; COUNTRY: UNITED STATES OF AMERICA
 ; ZIP: 94104

COMPUTER READABLE FORM:
 ; MEDIUM TYPE: Floppy disk
 ; COMPUTER: IBM PC compatible
 ; OPERATING SYSTEM: PC-DOS/MS-DOS
 ; SOFTWARE: PatentIn Release #1.0, Version #1.30
 ; CURRENT APPLICATION DATA:
 ; APPLICATION NUMBER: US/08/915,136
 ; FILING DATE:
 ; CLASSIFICATION:
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: 08/480,604
 ; FILING DATE:
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: US 08/405,496
 ; FILING DATE: 16-MAR-1995
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: US 08/329,154
 ; FILING DATE: 25-OCT-1994
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: US 08/161,907
 ; FILING DATE: 02-DEC-1993
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: US 07/985,321
 ; FILING DATE: 04-DEC-1992
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: US 07/429,791
 ; FILING DATE: 31-OCT-1989
 ; ATTORNEY/AGENT INFORMATION:
 ; NAME: INGOLIA, DIANE E.
 ; REGISTRATION NUMBER: 40,027
 ; REFERENCE/DOCKET NUMBER: OPHD-01763

TELECOMMUNICATION INFORMATION:

TELEPHONE: (415) 705-8410
 TELEFAX: (415) 397-8338
 INFORMATION FOR SEQ ID NO: 26:
 SEQUENCE CHARACTERISTICS:
 LENGTH: 462 amino acids
 TYPE: amino acid
 TOPOLOGY: linear
 MOLECULE TYPE: protein
 US-08-915-136-26

Query Match 48.7%; Score 1113.5; DB 2; Length 462;
 Best Local Similarity 49.9%; Pred. NO. 9.2e-83;
 Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

QY 8 LILYFNKLYKIKDINSILDMRYENKFIIDISGVGSINISGVYIYSTNRQFGIYSKXP 67
 DB 28 LLSTFTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLENLES 87
 QY 68 SEVNIQAQNDIIYNGRYQNFISFWVRIPKYFNKVLNNEYYTIIDCIRNNNSGKISLNY 127
 DB 88 SKIEVILKNAIVNSMYENFSTFWIRIPKYPNSISLANEYTIINCM-ENNSGKYSLNY 146
 QY 128 NKIIWTLODTAGNNQKLVFNYYTOMISIDYINKWIFVTITNNRLNGSRYYINGLIDEKS 187
 DB 147 GEIITWLTQDTQETKQKRVWFVKYSQMINISDIYNRWIFVTITNNRLNNSKIYINGRLIDQKP 206
 QY 188 ISNLGDIHVSNDILFKIVGNDT-RVVGIRYKVFDETELKTEIETLYSDPDPSPILKDF 246
 DB 207 ISNLGDIHVSNDILFKIVGNDT-RVVGIRYKVFDETELKTEIETLYSDPDPSPILKDF 266
 QY 247 WGNLYLNKRYLLNLLRTDKSITONS----NFLNINQORGVYQKPNIFSNTRLYTGVEV 302
 DB 267 WGDYLDYKPYMLNLYDPNPKYVNVNNGIRGYMLKPGSVMTTNIYLNSSLYRGTKF 326
 QY 303 IIRKNGSTDINTDNFVRKNDLAYINVDVDEYRLYADISIAKPEKIILKITSNNS 362
 DB 327 IIRKNGSTDINTDNFVRKNDLAYINVDVDEYRLYADISIAKPEKIILKITSNNS 382
 QY 363 LGQIIYVDS-----IGNCTMNFQNNNGNIGLLGHSNN----LVASSWYNNIRKNTS 413
 DB 383 LSQVVMKSKNDQGITNKCKNLDNNGNDIGFHFQFNIAKLVASNNYNNQIERSSR 442
 QY 414 SNGCFWSFISKEHGWQE 430
 DB 443 TLGCSWEFIPVDDGWGE 459

RESULT 12

US-09-084-517-26
 ; Sequence 26, Application US/09084517
 ; Patent No. 6613329
 ; GENERAL INFORMATION:
 ; APPLICANT: KINK, JOHN A.
 ; APPLICANT: WILLIAMS, JAMES A.
 ; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
 ; PREVENTION OF C. DIFFICILE DISEASE
 ; NUMBER OF SEQUENCES: 30
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
 ; STREET: 220 MONTGOMERY STREET, SUITE 2200
 ; CITY: SAN FRANCISCO
 ; STATE: CALIFORNIA
 ; COUNTRY: UNITED STATES OF AMERICA
 ; ZIP: 94104
 ; COMPUTER READABLE FORM:
 ; MEDIUM TYPE: Floppy disk
 ; COMPUTER: IBM PC compatible
 ; OPERATING SYSTEM: PC-DOS/MS-DOS
 ; SOFTWARE: PatentIn Release #1.0, Version #1.25
 ; CURRENT APPLICATION DATA:
 ; APPLICATION NUMBER: US/09/084,517
 ; FILING DATE:

CLASSIFICATION:
PRIOR APPLICATION DATA: US 08/
FILING DATE: 16-MAR-1995
PRIOR APPLICATION NUMBER: 2183-5673
APPLICATION DATA: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA: US 08/161,907
FILING DATE: 02-DEC-1993
APPLICATION DATA: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: CARROLL, PETER G.
REGISTRATION NUMBER: 32,837
REFERENCE/DOCKET NUMBER: OPHD-01610
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-084-517-26

Query Match 48.7%; Score 1113.5; DB 2; Length 462;
Best Local Similarity 49.9%; Pred. No. 9.2e-83; Mismatches 125; Indels 19; Gaps 7;
Matches 218; Conservative 75;
QY 8 LILFVFNKLYKIKNSILDMRYENKFKIDISGYGNSINGDVYIYSTRNQFGIYSSKP 67
DB 28 LLSFTFEYIKNLINTSILNRYESNHLIDLSRYASKINSGKVNFPDIDKQIQLFNLES 87
QY 68 SEVNIQAQNDIIYNGRYQNFISFWIRIPKYNKVLNNVEYTIIDCIERNNSGWSKISLNY 127
DB 88 SKIEVILKNAIVNYSWYENFSTFWIRIPKYNFNSISLNNVEYTIINCM-ENNSGWSKISLNY 146
QY 128 NKIIWLTQDTAGNOKLVFNVTOMISISDYINKWIFVITNNRLGNSRIYINGNLIDKS 187
DB 147 GEIITWLTQDTQBIKQVVFVKYSQMINISDYINRWIFVITNNRLGNSRIYINGNLIDQKP 206
QY 188 ISNLDIHSNLDHVSNIILFKIVGCDT-RYVGIRYKVPDTELKTEIETLYSDPDPKILKDF 246
DB 207 ISNLDIHSNLDHVSNIILFKIVGCDT-RYVGIRYKVPDTELKTEIETLYSDPDPKILKDF 266
QY 247 WGNLYLNNKRYLLNLLRTDKSITONS-----NFLNINOQRYGVYQKPNFISNTRLYTGVEV 302
DB 267 WGDYLYQDKPYMNLNYPKVDVNVNNGVIRGYMYLKGPRGVSMTTNIYLSNLSYRGTKF 326
QY 303 IIRKNGSTDISNTDNFVRKNDLAYINVVDVVEYRLYADISIAKPEKIKLIRTSNNS 362
DB 327 IIRKNGSTDISNTDNFVRKNDLAYINVVDVVEYRLYADISIAKPEKIKLIRTSNNS 382
QY 363 LQGIIVMDS-----IGNNCTMNFQNNNGNIGLGFHNSN-----LVASSWYNNRKNTS 413
DB 383 LSQVVMVMSKDDQGIIRNCKMKNLQNNNDIGFIFGPHLYDNTAKLVASWYNNRQIERSR 442
QY 414 SNGCFWFSFISKEHGWQE 430
DB 443 TLGCSWEFIPVDDGWGE 459

RESULT 13
US-10-360-101-219
; Sequence 219, Application US/10360101
; Patent No. 6861236
; GENERAL INFORMATION:

APPLICANT: Moll, Gert N.
APPLICANT: Leenhouts, Cornelis J.
TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
FILE REFERENCE: 2183-5673
CURRENT APPLICATION NUMBER: US/10/360,101
CURRENT FILING DATE: 2003-02-07
PRIOR APPLICATION NUMBER: EP 02077060.8
PRIOR FILING DATE: 2002-05-24
NUMBER OF SEQ ID NOS: 309
SOFTWARE: Patent in version 3.1
SEQ ID NO 219
LENGTH: 848
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: sequence A-heavy chain of clostridium botulinum toxin type A
US-10-360-101-219

Query Match 47.7%; Score 1092.5; DB 2; Length 848;
Best Local Similarity 48.6%; Pred. No. 1.1e-80;
Matches 216; Conservative 76; Mismatches 133; Indels 19; Gaps 7;
QY 2 YTNDKILILFVFNKLYKIKNSILDMRYENKFKIDISGYGNSINGDVYIYSTRNQFG 61
DB 408 YVDNKKLLSTFEYIKNVNTSILSIYVKKDDLDLSRYGAKINIGRVDYVYDSIDKQIK 467
QY 62 IYSSKPESEVNIQAQNDIIYNGRYQNFISFWIRIPKYNKVLNNVEYTIIDCIERNNSGW 121
DB 468 LINESSTIEVILKNAIVNYSWYENFSTFWIRIPKYNFNSISLNNVEYTIINCM-ENNSGW 526
QY 122 KISLNNKIIWLTQDTAGNOKLVFNVTOMISISDYINKWIFVITNNRLGNSRIYINGNL 181
DB 527 KVSILNYGEIITWLTQDNQNIQVVFVKYSQMINISDYINRWIFVITNNRLTKSIYINGR 586
QY 182 LIDKSTISNLDHVSNIILFKIVGCDT-RYVGIRYKVPDTELKTEIETLYSDPDP 240
DB 587 LIDQKPSINLGNHASNIMFKLDGCRDPRYIMIKYFNLFKELNEKIKLDLYDSQNS 646
QY 241 SILKDFWGNLYLNNKRYLLNLLRTDKSITONS-----NFLNINOQRYGVYQKPNFISNTR 296
DB 647 GILKDFWGNLYLNNKRYLLNLLRTDKSITONS-----NFLNINOQRYGVYQKPNFISNTR 706
QY 297 YTGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDVVEYRLYADISIAKPEKIKLIR 356
DB 707 YEGTKFIKKYAS---GNEDNIVNRRDVIYNNVVKNEKYEYRLATNASQAGVEKILSALEI 763
QY 357 SNNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLGFHNSN-----LVASSWYNN 407
DB 764 PDVGN-LSQVVMVMSKDDQGIIRNCKMKNLQNNNDIGFIFGPHLYDNTAKLVASWYNNRQ 822
QY 408 IRKNTSSNGCFWFSFISKEHGWQE 431
DB 823 VGKASRTFGCSWEFIPVDDGWGES 846

RESULT 14
US-09-288-326A-9
; Sequence 9, Application US/09288326A
; Patent No. 6776990
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; FILE REFERENCE: 17282
; CURRENT APPLICATION NUMBER: US/09/288,326A
; CURRENT FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 15
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 9
; LENGTH: 382
; TYPE: PRT

ORGANISM: Clostridium Botulinum
US-09-288-326A-9

Query Match 44.6%; Score 1019.5; DB 2; Length 382;
Best Local Similarity 51.4%; Pred. No. 3.4e-75;
Matches 197; Conservative 65; Mismatches 102; Indels 19; Gaps 7;

QY 62 IYSSKPEVNIQNDIIYNGRYCNFISFWVRIPKYNKVLNNEVTIIDCIRNNNSGW 121
DB 2 LFNLESSKIEVILKNAIVNYSMTYENFTSWIRIPKYNFISLNNEYTIINCW-ENNSGW 60

QY 122 KISLNYNKIIITWLTQDTAGNQKLVFNFTOMISISDYINKWIFVFTITNNRLGNSRIYINGN 181
DB 61 KVSINYGELIITWLTQDTQEIQRVVVKYSQMINISDYINRWIFVFTITNNRLNNSKIYINGR 120

QY 182 LIDEKISINLGDHVSNDILFKVGCNDT-RYVGIRYKVPDTELKGTETIETLYSDEPDP 240
DB 121 LIDQKPIISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELANEKEIKDLYDNQNS 180

QY 241 SILKDFWGNLYLLNRYLLNLLRTDKSITONS-----NFLNINQORGVYQKPNIFSNTRL 296
DB 181 GILKDFWGDYLDQKPYMLNLYDPNKYVDVNVNGIRGYMLKGPGRSVMTTNIYLNSSL 240

QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRT 356
DB 241 YRGTKFIKKYAS---GNKDNIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 297

QY 357 SNSNNSLGQIIIVMDS-----IGNNCTMNFQNNNGNIGLLGPHSN-----LVASSWYNN 407
DB 298 PDVGN-LSQVVMKSKNDQGITNKKCNQLQDNNNDIGFTGFPHQFNNAIKNVKNVYNNRQ 356

QY 408 IRKNTSSNGCFWSFISKEHGQWE 430
DB 357 IERSRTLGCSEWEIFPVDGNGE 379

Search completed: March 2, 2006, 00:49:32
Job time : 54 secs

RESULT 15
US-09-548-409B-9
; Sequence 9, Application US/09548409B
; Patent No. 684398
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitis
; FILE REFERENCE: 17282CIP(AP)
; CURRENT APPLICATION NUMBER: US/09/548,409B
; CURRENT FILING DATE: 2000-04-13
; PRIOR APPLICATION NUMBER: US 09/288,326
; PRIOR FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 12
; SOFTWARE: FastSeq for Windows Version 3.0
; SEQ ID NO 9
; LENGTH: 382
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-09-548-409B-9

Query Match 44.6%; Score 1019.5; DB 2; Length 382;
Best Local Similarity 51.4%; Pred. No. 3.4e-75;
Matches 197; Conservative 65; Mismatches 102; Indels 19; Gaps 7;

QY 62 IYSSKPEVNIQNDIIYNGRYCNFISFWVRIPKYNKVLNNEVTIIDCIRNNNSGW 121
DB 2 LFNLESSKIEVILKNAIVNYSMTYENFTSWIRIPKYNFISLNNEYTIINCW-ENNSGW 60

QY 122 KISLNYNKIIITWLTQDTAGNQKLVFNFTOMISISDYINKWIFVFTITNNRLGNSRIYINGN 181
DB 61 KVSINYGELIITWLTQDTQEIQRVVVKYSQMINISDYINRWIFVFTITNNRLNNSKIYINGR 120

QY 182 LIDEKISINLGDHVSNDILFKVGCNDT-RYVGIRYKVPDTELKGTETIETLYSDEPDP 240
DB 121 LIDQKPIISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELANEKEIKDLYDNQNS 180

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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 171.5 Seconds
(without alignments)
1050.055 Million cell updates/sec

Title: US-08-981-087B-1
Perfect score: 2288
Sequence: 1 SYTNDKILLYFNKLYKKIK.....TSSNGCFWSPISKEHGWOEN 431

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA Main:
1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep.*
2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep.*
3: /cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep.*
4: /cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep.*
5: /cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep.*
6: /cgn2_6/ptodata/1/pubpaa/US11_PUBCOMB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	2288	100.0	431	2	US-08-981-087A-1
2	2288	100.0	432	3	US-09-910-186A-16
3	2288	100.0	432	3	US-09-910-186A-34
4	2288	100.0	432	4	US-10-452-024-178
5	2288	100.0	645	4	US-10-130-973A-8
6	2288	100.0	645	4	US-10-478-516-5
7	2288	100.0	657	4	US-10-478-516-6
8	2288	100.0	657	4	US-10-478-516-7
9	2288	100.0	685	4	US-10-130-973A-7
10	2288	100.0	862	4	US-10-130-973A-4
11	2288	100.0	887	4	US-10-130-973A-6
12	2288	100.0	979	4	US-10-478-516-26
13	2288	100.0	1032	4	US-10-130-973A-15
14	2288	100.0	1092	4	US-10-130-973A-23
15	2288	100.0	1192	4	US-10-478-516-23
16	2288	100.0	1192	4	US-10-478-516-24
17	2288	100.0	1278	4	US-10-452-024-152
18	2288	100.0	1278	4	US-10-205-516-12
19	2288	100.0	1288	4	US-10-205-516-26
20	1887.5	82.5	1280	4	US-10-452-024-162
21	1833	80.1	1274	4	US-10-354-774-71
22	1833	80.1	1274	4	US-10-271-012-71
23	1833	80.1	1274	4	US-10-452-024-6
24	1833	80.1	1274	4	US-10-729-122-71
25	1833	80.1	1274	4	US-10-729-039-71
26	1833	80.1	1274	5	US-10-729-527-71
27	1833	80.1	1274	5	US-10-727-898-71

28	1833	80.1	1274	5	US-10-728-696-71	Sequence 71, Appl
29	1833	80.1	1274	6	US-11-001-241-71	Sequence 71, Appl
30	1827	79.9	1268	4	US-10-452-024-156	Sequence 156, App
31	1800	78.7	448	4	US-10-354-774-73	Sequence 73, Appl
32	1800	78.7	448	4	US-10-271-012-73	Sequence 73, Appl
33	1800	78.7	448	4	US-10-729-122-73	Sequence 73, Appl
34	1800	78.7	448	4	US-10-729-039-73	Sequence 73, Appl
35	1800	78.7	448	5	US-10-729-527-73	Sequence 73, Appl
36	1800	78.7	448	5	US-10-728-898-73	Sequence 73, Appl
37	1800	78.7	448	5	US-10-728-696-73	Sequence 73, Appl
38	1800	78.7	448	6	US-11-001-241-73	Sequence 127, App
39	1458	63.7	1251	4	US-10-452-024-127	Sequence 14, Appl
40	1457.5	63.7	449	3	US-09-910-186A-14	Sequence 56, Appl
41	1457.5	63.7	452	4	US-10-354-774-56	Sequence 56, Appl
42	1457.5	63.7	452	4	US-10-271-012-56	Sequence 56, Appl
43	1457.5	63.7	452	4	US-10-729-122-56	Sequence 56, Appl
44	1457.5	63.7	452	4	US-10-729-039-56	Sequence 56, Appl
45	1457.5	63.7	452	5	US-10-729-527-56	Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-1
; Sequence 1, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Pasechnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304Alth Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981.087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 1:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 431 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-1

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Query Match      100.0%; Score 2288; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISNGDVYIYSTNRNQF 60
DB 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISNGDVYIYSTNRNQF 60
QY 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
DB 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
QY 121 WKISLNYNKIITWLTQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
DB 121 WKISLNYNKIITWLTQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
QY 181 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYRIRYKVPDTELKTEIETIYSDEPDP 240
DB 181 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYRIRYKVPDTELKTEIETIYSDEPDP 240
QY 241 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQVGYQKPNIFSNTRLYTGV 300
DB 241 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQVGYQKPNIFSNTRLYTGV 300
QY 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
DB 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
QY 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNLVASSWYNNIRKNTSSNGCFWS 420
DB 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNLVASSWYNNIRKNTSSNGCFWS 420
QY 421 FISKEHGWQEN 431
DB 421 FISKEHGWQEN 431

RESULT 2
US-09-910-186A-16
; Sequence 16, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Material Command
; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
; FILE REFERENCE: A33626-A 067252.0107
; CURRENT APPLICATION NUMBER: US/09/910,186A
; CURRENT FILING DATE: 2001-07-20
; PRIOR APPLICATION NUMBER: 60/133,865
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,866
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,867
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,868
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,869
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,873
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 08/123,975
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 16
; LENGTH: 432
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:

Query Match      100.0%; Score 2288; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISNGDVYIYSTNRNQF 60
DB 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISNGDVYIYSTNRNQF 60
QY 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
DB 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
QY 121 WKISLNYNKIITWLTQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
DB 121 WKISLNYNKIITWLTQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
QY 181 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYRIRYKVPDTELKTEIETIYSDEPDP 240
DB 181 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYRIRYKVPDTELKTEIETIYSDEPDP 240
QY 241 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQVGYQKPNIFSNTRLYTGV 300
DB 241 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQVGYQKPNIFSNTRLYTGV 300
QY 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
DB 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
QY 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNLVASSWYNNIRKNTSSNGCFWS 420
DB 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNLVASSWYNNIRKNTSSNGCFWS 420
QY 421 FISKEHGWQEN 431
DB 421 FISKEHGWQEN 431

RESULT 3
US-09-910-186A-34
; Sequence 34, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Material Command
; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
; FILE REFERENCE: A33626-A 067252.0107
; CURRENT APPLICATION NUMBER: US/09/910,186A
; CURRENT FILING DATE: 2001-07-20
; PRIOR APPLICATION NUMBER: PCT/US00/12890
; PRIOR FILING DATE: 2000-05-12
; PRIOR APPLICATION NUMBER: 60/133,865
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,866
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,867
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,868
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,869
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,873
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 08/123,975
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 432
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; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Synthetic Construct
US-09-910-186A-34

Query Match      100.0%; Score 2288; DB 3; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 61
Qy 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 120
Db 62 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 121
Qy 121 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 122 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 181
Qy 181 NLIDEKSIISNLGDIHVSNDNLFKIVGNCNDRYVIRYKVFDETELKTEIETLYSDEPDP 240
Db 182 NLIDEKSIISNLGDIHVSNDNLFKIVGNCNDRYVIRYKVFDETELKTEIETLYSDEPDP 241
Qy 241 SILKDFWGNLYLLNKRYYLLNLRTRDKSITQNSNPLNQORGYVQKPNIFSNTRLTYGV 300
Db 242 SILKDFWGNLYLLNKRYYLLNLRTRDKSITQNSNPLNQORGYVQKPNIFSNTRLTYGV 301
Qy 301 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
Db 302 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 361
Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 362 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 421
Qy 421 FISKEHGWQEN 431
Db 422 FISKEHGWQEN 432

RESULT 4
US-10-452-024-178
; Sequence 178, Application US/10452024
; Publication No. US20040013687A1
; GENERAL INFORMATION:
; APPLICANT: Simpson, Lance
; APPLICANT: Park, Jung-Beak
; APPLICANT: Makymowych, Andrew
; TITLE OF INVENTION: Compositions and Methods For Trans epithelial Molecular Transport
; FILE REFERENCE: 9855-96U1
; CURRENT APPLICATION NUMBER: US/10/452,024
; CURRENT FILING DATE: 2003-06-02
; PRIOR APPLICATION NUMBER: 60/384,949
; PRIOR FILING DATE: 2002-05-31
; NUMBER OF SEQ ID NOS: 188
; SOFTWARE: Patent in version 3.2
; SEQ ID NO 178
; LENGTH: 432
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-452-024-178

Query Match      100.0%; Score 2288; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 61

; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Synthetic Construct
US-10-130-973A-8

Query Match      100.0%; Score 2288; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 60
Db 215 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 274
Qy 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 120
Db 275 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 334
Qy 121 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 335 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 394
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Qy 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 120
Db 62 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 121
Qy 121 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 122 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 181
Qy 181 NLIDEKSIISNLGDIHVSNDNLFKIVGNCNDRYVIRYKVFDETELKTEIETLYSDEPDP 240
Db 182 NLIDEKSIISNLGDIHVSNDNLFKIVGNCNDRYVIRYKVFDETELKTEIETLYSDEPDP 241
Qy 241 SILKDFWGNLYLLNKRYYLLNLRTRDKSITQNSNPLNQORGYVQKPNIFSNTRLTYGV 300
Db 242 SILKDFWGNLYLLNKRYYLLNLRTRDKSITQNSNPLNQORGYVQKPNIFSNTRLTYGV 301
Qy 301 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
Db 302 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 361
Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 362 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 421
Qy 421 FISKEHGWQEN 431
Db 422 FISKEHGWQEN 432

RESULT 5
US-10-130-973A-8
; Sequence 8, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 8
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-8

Query Match      100.0%; Score 2288; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 60
Db 215 SYTNDKILILYFNKLYKKIKDMSILDYRNNKFDISGYGNSISGVDVYIYSTNRNQF 274
Qy 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 120
Db 275 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLNNEYYTIDCIRNNSG 334
Qy 121 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 335 WKISLNYNKIIWTLODTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 394
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QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVPDTELGTETIETLYSDEPDP 240
DB 395 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVPDTELGTETIETLYSDEPDP 454
QY 241 SILKDFWGNLYLLNKRYLLNLLRTDKSIITQNSNLFNINQORGVYQKPNIFSNTRLTYGV 300
DB 455 SILKDFWGNLYLLNKRYLLNLLRTDKSIITQNSNLFNINQORGVYQKPNIFSNTRLTYGV 514
QY 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
DB 515 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 574
QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
DB 575 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 634
QY 421 FISKEHGWQEN 431
DB 635 FISKEHGWQEN 645
RESULT 6
US-10-478-516-5
; Sequence 5, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: diphtheria toxin translocation domain with Bont/F-HC
US-10-478-516-5
Query Match 100.0%; Score 2288; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKNKPIDISGYGSNISINGDVYIYSTNRNQF 60
DB 215 SYTNDKILILYFNKLYKKIKDINSILDMRYENKNKPIDISGYGSNISINGDVYIYSTNRNQF 274
QY 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNLNNEYYTIIDCIRNNNSG 120
DB 275 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNLNNEYYTIIDCIRNNNSG 334
QY 121 WKISLNNYKLIITLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
DB 335 WKISLNNYKLIITLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 394
QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVPDTELGTETIETLYSDEPDP 240
DB 395 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVPDTELGTETIETLYSDEPDP 454
QY 241 SILKDFWGNLYLLNKRYLLNLLRTDKSIITQNSNLFNINQORGVYQKPNIFSNTRLTYGV 300
DB 455 SILKDFWGNLYLLNKRYLLNLLRTDKSIITQNSNLFNINQORGVYQKPNIFSNTRLTYGV 514
QY 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
DB 515 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 574

QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
DB 575 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 634
QY 421 FISKEHGWQEN 431
DB 635 FISKEHGWQEN 645

RESULT 7

US-10-478-516-6
; Sequence 6, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 6
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: thrombin linker, diphtheria toxin translocation domain, Bont/F-HC
US-10-478-516-6

Query Match 100.0%; Score 2288; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKNKPIDISGYGSNISINGDVYIYSTNRNQF 60
DB 227 SYTNDKILILYFNKLYKKIKDINSILDMRYENKNKPIDISGYGSNISINGDVYIYSTNRNQF 286
QY 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNLNNEYYTIIDCIRNNNSG 120
DB 287 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNLNNEYYTIIDCIRNNNSG 346
QY 121 WKISLNNYKLIITLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
DB 347 WKISLNNYKLIITLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 406
QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVPDTELGTETIETLYSDEPDP 240
DB 407 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVPDTELGTETIETLYSDEPDP 466
QY 241 SILKDFWGNLYLLNKRYLLNLLRTDKSIITQNSNLFNINQORGVYQKPNIFSNTRLTYGV 300
DB 467 SILKDFWGNLYLLNKRYLLNLLRTDKSIITQNSNLFNINQORGVYQKPNIFSNTRLTYGV 526
QY 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
DB 527 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 596
QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
DB 587 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 646
QY 421 FISKEHGWQEN 431
DB 647 FISKEHGWQEN 657

RESULT 8

US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No. US20040208889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, Bont/F-H
US-10-478-516-7

Query Match 100.0%; Score 2288; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 60
Db 227 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 286

Qy 61 GIYSSKPESEVNIQAQNDIIYNGRYQNFISFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 120
Db 287 GIYSSKPESEVNIQAQNDIIYNGRYQNFISFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 346

Qy 121 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLGNRIYING 180
Db 347 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLGNRIYING 406

Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYKVPFDTGLKTEIETLYSDEPDP 240
Db 407 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYKVPFDTGLKTEIETLYSDEPDP 466

Qy 241 SILKDFWGNLYLLNRYKRYLLNLLRTDKSITQNSFLNINQORGVYQKPNIFSNTRYLYTGV 300
Db 467 SILKDFWGNLYLLNRYKRYLLNLLRTDKSITQNSFLNINQORGVYQKPNIFSNTRYLYTGV 526

Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIKLIRTSNSN 360
Db 527 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIKLIRTSNSN 586

Qy 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 587 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 646

Qy 421 FISKEHGWQEN 431
Db 647 FISKEHGWQEN 657

RESULT 9
US-10-130-973A-7
; Sequence 7, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21

PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 7
; LENGTH: 685
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-7

Query Match 100.0%; Score 2288; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 60
Db 255 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 314

Qy 61 GIYSSKPESEVNIQAQNDIIYNGRYQNFISFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 120
Db 315 GIYSSKPESEVNIQAQNDIIYNGRYQNFISFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 374

Qy 121 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLGNRIYING 180
Db 375 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLGNRIYING 434

Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYKVPFDTGLKTEIETLYSDEPDP 240
Db 435 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYKVPFDTGLKTEIETLYSDEPDP 494

Qy 241 SILKDFWGNLYLLNRYKRYLLNLLRTDKSITQNSFLNINQORGVYQKPNIFSNTRYLYTGV 300
Db 495 SILKDFWGNLYLLNRYKRYLLNLLRTDKSITQNSFLNINQORGVYQKPNIFSNTRYLYTGV 554

Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIKLIRTSNSN 360
Db 555 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIKLIRTSNSN 614

Qy 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 615 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 674

Qy 421 FISKEHGWQEN 431
Db 675 FISKEHGWQEN 685

RESULT 10
US-10-130-973A-4
; Sequence 4, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0

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; SEQ ID NO 4
; LENGTH: 862
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-4

Query Match      100.0%; Score 2288; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 2.6e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
DB 432 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 491
QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 120
DB 492 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 551
QY 121 WKISLNVKLIWTLODTAGNKKLVFNQYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 180
DB 552 WKISLNVKLIWTLODTAGNKKLVFNQYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 611
QY 181 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVGIYFKVDFTELKTEIETIYSDEPDP 240
DB 612 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVGIYFKVDFTELKTEIETIYSDEPDP 671
QY 241 SILKDFWGNLYLLNKRYYLLNLRDTSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 300
DB 672 SILKDFWGNLYLLNKRYYLLNLRDTSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 731
QY 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNS 360
DB 732 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNS 791
QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
DB 792 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 851
QY 421 FISKEHGQWEN 431
DB 852 FISKEHGQWEN 862

RESULT 11
US-10-130-973A-6
; Sequence 6, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; PRIOR FILING DATE: 2002-10-21
; PRIOR FILING DATE: 2000-12-04
; PRIOR FILING DATE: 1999-12-02
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 6
; LENGTH: 887
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-6
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Query Match      100.0%; Score 2288; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 2.7e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
DB 457 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 516
QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 120
DB 517 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 576
QY 121 WKISLNVKLIWTLODTAGNKKLVFNQYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 180
DB 577 WKISLNVKLIWTLODTAGNKKLVFNQYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 636
QY 181 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVGIYFKVDFTELKTEIETIYSDEPDP 240
DB 637 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVGIYFKVDFTELKTEIETIYSDEPDP 696
QY 241 SILKDFWGNLYLLNKRYYLLNLRDTSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 300
DB 697 SILKDFWGNLYLLNKRYYLLNLRDTSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 756
QY 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNS 360
DB 757 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNS 816
QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
DB 817 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 876
QY 421 FISKEHGQWEN 431
DB 877 FISKEHGQWEN 887

RESULT 12
US-10-478-516-26
; Sequence 26, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford C.
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 26
; LENGTH: 979
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
; OTHER INFORMATION: translocation
; OTHER INFORMATION: domain, with BoNT/F-HC
US-10-478-516-26

Query Match      100.0%; Score 2288; DB 4; Length 979;
Best Local Similarity 100.0%; Pred. No. 3.1e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
DB 549 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 608
QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVLNNEYTIIDCIRNNSG 120
```

Db 609 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 668
Qy 121 WKISLNYNKIIWTLODTAGNNQKLVFNQYOMISISDYINKWIFVTITNNLGNRIYING 180
Db 669 WKISLNYNKIIWTLODTAGNNQKLVFNQYOMISISDYINKWIFVTITNNLGNRIYING 728
Qy 181 NLIDEKISNLGDIHVSNDILFKIVGCDNTRYGVIRYKVPFDTLKGTEIETLYSDEPDP 240
Db 729 NLIDEKISNLGDIHVSNDILFKIVGCDNTRYGVIRYKVPFDTLKGTEIETLYSDEPDP 788
Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGVYQKPNIFSNTRLTYGV 300
Db 789 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGVYQKPNIFSNTRLTYGV 848
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 849 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIIKLIRTSNSN 908
Qy 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSNGCFWS 420
Db 909 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSNGCFWS 968
Qy 421 FISKEHGWQEN 431
Db 969 FISKEHGWQEN 979

RESULT 13
US-10-130-973A-15
; Sequence 15, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 15
; LENGTH: 1032
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-15

Query Match 100.0%; Score 2288; DB 4; Length 1032;
Best Local Similarity 100.0%; Pred. No. 3.3e-154; Mismatches 0; Indels 0; Gaps 0;
Matches 431; Conservative 0;
Qy 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISNGDVYIYSTNRNQF 60
Db 602 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISNGDVYIYSTNRNQF 661
Qy 61 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 120
Db 662 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 721
Qy 121 WKISLNYNKIIWTLODTAGNNQKLVFNQYOMISISDYINKWIFVTITNNLGNRIYING 180
Db 722 WKISLNYNKIIWTLODTAGNNQKLVFNQYOMISISDYINKWIFVTITNNLGNRIYING 781
Qy 181 NLIDEKISNLGDIHVSNDILFKIVGCDNTRYGVIRYKVPFDTLKGTEIETLYSDEPDP 240
Db 782 NLIDEKISNLGDIHVSNDILFKIVGCDNTRYGVIRYKVPFDTLKGTEIETLYSDEPDP 841

Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGVYQKPNIFSNTRLTYGV 300
Db 842 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGVYQKPNIFSNTRLTYGV 901
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 902 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIIKLIRTSNSN 961
Qy 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSNGCFWS 420
Db 962 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSNGCFWS 1021
Qy 421 FISKEHGWQEN 431
Db 1022 FISKEHGWQEN 1032

RESULT 14
US-10-130-973A-14
; Sequence 14, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 14
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-14
Query Match 100.0%; Score 2288; DB 4; Length 1092;
Best Local Similarity 100.0%; Pred. No. 3.5e-154; Mismatches 0; Indels 0; Gaps 0;
Matches 431; Conservative 0;
Qy 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISNGDVYIYSTNRNQF 60
Db 662 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISNGDVYIYSTNRNQF 721
Qy 61 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 120
Db 722 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 781
Qy 121 WKISLNYNKIIWTLODTAGNNQKLVFNQYOMISISDYINKWIFVTITNNLGNRIYING 180
Db 782 WKISLNYNKIIWTLODTAGNNQKLVFNQYOMISISDYINKWIFVTITNNLGNRIYING 841
Qy 181 NLIDEKISNLGDIHVSNDILFKIVGCDNTRYGVIRYKVPFDTLKGTEIETLYSDEPDP 240
Db 842 NLIDEKISNLGDIHVSNDILFKIVGCDNTRYGVIRYKVPFDTLKGTEIETLYSDEPDP 901
Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGVYQKPNIFSNTRLTYGV 300
Db 902 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGVYQKPNIFSNTRLTYGV 961
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 962 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIIKLIRTSNSN 1021
Qy 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSNGCFWS 420

Job time : 173.5 secs

Db 1022 NSLQIIIVMDSIGNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 1081
Qy 421 FISKEHCWQEN 431
Db 1082 FISKEHCWQEN 1092

RESULT 15
US-10-478-516-23
; Sequence 23, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112697.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 23
; LENGTH: 1192
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for SigD with the first 29 codons removed, thron
; OTHER INFORMATION: linker,
; OTHER INFORMATION: diphtheria toxin translocation domain, with BoNT/F-HC
US-10-478-516-23

Query Match 100.0%; Score 2288; DB 4; Length 1192;
Best Local Similarity 100.0%; Pred. NO. 3.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 SYTNDKILILFYFNKLYKKIKDINSILDMRYENKPFIDISGYGSNISINGDVYIYSTNRNQF 60
Db 762 SYTNDKILILFYFNKLYKKIKDINSILDMRYENKPFIDISGYGSNISINGDVYIYSTNRNQF 821
Qy 61 GIYSSKPESEVNIQAQNDIIYNGRYQNFISFWVRIPKPYFNKVLNNEYYIIDCIRNNNSG 120
Db 822 GIYSSKPESEVNIQAQNDIIYNGRYQNFISFWVRIPKPYFNKVLNNEYYIIDCIRNNNSG 881
Qy 121 WKISLNYNKKIITLQDTAGNQQKLVFNQYQMSISDYINKWIFVTITNNELGNSRIYNG 180
Db 882 WKISLNYNKKIITLQDTAGNQQKLVFNQYQMSISDYINKWIFVTITNNELGNSRIYNG 941
Qy 181 NLIDEKSI NLGDIHVSDNLI LFKIVGCDNTRYVGI RYKVPDTELKGTETIETLYSDEPDP 240
Db 942 NLIDEKSI NLGDIHVSDNLI LFKIVGCDNTRYVGI RYKVPDTELKGTETIETLYSDEPDP 1001
Qy 241 SILKDFWGNL LLYNKRYYLLNLRKTSITQNSNFLNINQORGVYQKPNIFSNTRLYTGV 300
Db 1002 SILKDFWGNL LLYNKRYYLLNLRKTSITQNSNFLNINQORGVYQKPNIFSNTRLYTGV 1061
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 1062 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 1121
Qy 361 NSLQIIIVMDSIGNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
Db 1122 NSLQIIIVMDSIGNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 1181
Qy 421 FISKEHCWQEN 431
Db 1182 FISKEHCWQEN 1192

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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:12:18 ; Search time 17.5 Seconds
(without alignments)
491.279 Million cell updates/sec

Title: US-08-981-087B-1

Perfect score: 2288

Sequence: 1 SYTNDKILILYFNKLYKKIK.....TSSNGCFWSPISKEHGQEN 431

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 133702 seqs, 19947517 residues

Total number of hits satisfying chosen parameters: 133702

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Maximum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : Published Applications AA New:

- 1: /cgn2_6/ptodata/1/pubpaa/US08 NEW PUB.pap.*
- 2: /cgn2_6/ptodata/1/pubpaa/US06 NEW PUB.pap.*
- 3: /cgn2_6/ptodata/1/pubpaa/US07 NEW PUB.pap.*
- 4: /cgn2_6/ptodata/1/pubpaa/PCT_NEW PUB.pap.*
- 5: /cgn2_6/ptodata/1/pubpaa/US09 NEW PUB.pap.*
- 6: /cgn2_6/ptodata/1/pubpaa/US10 NEW PUB.pap.*
- 7: /cgn2_6/ptodata/1/pubpaa/US11 NEW PUB.pap.*
- 8: /cgn2_6/ptodata/1/pubpaa/US60 NEW PUB.pap.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	2288	100.0	1059	7	US/11/062 Sequence 5, Appli
2	2288	100.0	1084	7	US/11/062 Sequence 8, Appli
3	1833	80.1	838	6	US-10-909-769-28 Sequence 28, Appl
4	1457.5	63.7	829	6	US-10-909-769-26 Sequence 26, Appl
5	1120.5	49.0	849	6	US-10-909-769-18 Sequence 18, Appl
6	1120.5	49.0	1067	7	US/11/062 Sequence 3, Appli
7	1120.5	49.0	1092	7	US/11/062 Sequence 6, Appli
8	781	34.1	900	6	US-10-909-769-20 Sequence 20, Appl
9	769	33.6	1070	7	US/11/062 Sequence 4, Appli
10	769	33.6	1095	7	US/11/062 Sequence 7, Appli
11	736.5	32.2	855	6	US-10-909-769-30 Sequence 30, Appl
12	676.5	29.6	1169	7	US-11-077-550-20 Sequence 20, Appl
13	580.5	25.4	834	6	US-10-909-769-24 Sequence 24, Appl
14	553	24.2	1315	7	US-11-077-550-141 Sequence 141, App
15	546	23.9	842	6	US-10-909-769-22 Sequence 22, Appl
16	160	7.0	588	7	US-11-052-554A-339 Sequence 339, App
17	149.5	6.5	2340	7	US-11-052-554A-171 Sequence 171, App
18	147	6.4	2710	7	US-11-051-453-41 Sequence 41, Appl
19	135	5.9	2902	7	US-11-051-453-91 Sequence 91, Appl
20	129	5.6	2367	7	US-11-051-453-42 Sequence 42, Appl
21	126	5.5	874	7	US-11-087-099-10263 Sequence 10263, A
22	125.5	5.5	849	7	US-11-087-099-1756 Sequence 1756, Ap
23	125.5	5.5	3194	7	US-11-052-554A-90 Sequence 90, Appl
24	125	5.5	871	7	US-11-087-099-6053 Sequence 6053, Ap
25	120	5.2	567	6	US-10-485-517-216 Sequence 216, App

ALIGNMENTS

RESULT 1

US/11/062
; Sequence 5, Application US/11062471A
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassem
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; PRIOR FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 5
; LENGTH: 1059
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062, 471A-5

Query Match 100.0%; Score 2288; DB 7; Length 1059;
Best Local Similarity 100.0%; Pred. No. 3.4e-160;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	1	SYTNDKILILYFNKLYKKIKDMSILDMRYENKPKIDISGYGNSISNGDVVYISTNRNQF	60
DB	629	SYTNDKILILYFNKLYKKIKDMSILDMRYENKPKIDISGYGNSISNGDVVYISTNRNQF	688
QY	61	GIYKSKSEVNIAQNNDIIYNGRYONFISFWRIPKYFNKVLNNETIIDCRNNNSG	120
DB	689	GIYKSKSEVNIAQNNDIIYNGRYONFISFWRIPKYFNKVLNNETIIDCRNNNSG	748
QY	121	WKISLNYNKKIITWLDQTAGNKKLVFNVTOMISIDYINKWIFVTITNNLGNRIYING	180
DB	749	WKISLNYNKKIITWLDQTAGNKKLVFNVTOMISIDYINKWIFVTITNNLGNRIYING	808
QY	181	NLIDKESISNLDIHVSNDNILFKIVGNDTRYGVIRYKFDTELKTEIETLSDDEDP	240
DB	809	NLIDKESISNLDIHVSNDNILFKIVGNDTRYGVIRYKFDTELKTEIETLSDDEDP	868

QY 241 SILKDFWGNLYLNKRYLLNLRTRDKSITQNSNPLNINQORGVYQKPNIFSNTRLTYGV 300
 Db 869 SILKDFWGNLYLNKRYLLNLRTRDKSITQNSNPLNINQORGVYQKPNIFSNTRLTYGV 928
 QY 301 EVIIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKLIRTSNS 360
 Db 929 EVIIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKLIRTSNS 988
 QY 361 NSLQGIIVWDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
 Db 989 NSLQGIIVWDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 1048
 QY 421 FISKEHGWQEN 431
 Db 1049 FISKEHGWQEN 1059
 RESULT 2
 US-11/062
 ; Sequence 8, Application US/11062471A
 ; Publication No. US2005025093A1
 ; GENERAL INFORMATION:
 ; APPLICANT: SHONE, Clifford Charles
 ; APPLICANT: SUTTON, John Mark
 ; APPLICANT: HALLIS, Bassam
 ; APPLICANT: SILMAN, Nigel
 ; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
 ; FILE REFERENCE: 1581.0800001
 ; CURRENT APPLICATION NUMBER: US/11/062.471A
 ; CURRENT FILING DATE: 2005-02-22
 ; PRIOR APPLICATION NUMBER: 09/831,050
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: PCT/GB99/03699
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: GB 9824282.9
 ; PRIOR FILING DATE: 1998-11-05
 ; NUMBER OF SEQ ID NOS: 11
 ; SOFTWARE: Patent In Ver. 2.1
 ; SEQ ID NO 8
 ; LENGTH: 1084
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
 US/11/062.471A-8
 Query Match 100.0%; Score 2288; DB 7; Length 1084;
 Best Local Similarity 100.0%; Pred. No. 3.5e-160;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDMSILDYRNNKPFIDISGYGNSISINGDVYIYSTNRNQF 60
 Db 654 SYTNDKILILYFNKLYKKIKDMSILDYRNNKPFIDISGYGNSISINGDVYIYSTNRNQF 713
 QY 61 GYSSKPSSEVNIQAQNDIINYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
 Db 714 GYSSKPSSEVNIQAQNDIINYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 773
 QY 121 WKISLNYNK---IWTLDQTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 180
 Db 774 WKISLNYNK---IWTLDQTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 833
 QY 181 NLIDEKSIISLNGDIHVSNDILFKIVGCDNTRVYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 240
 Db 834 NLIDEKSIISLNGDIHVSNDILFKIVGCDNTRVYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 893
 QY 241 SILKDFWGNLYLNKRYLLNLRTRDKSITQNSNPLNINQORGVYQKPNIFSNTRLTYGV 300
 Db 894 SILKDFWGNLYLNKRYLLNLRTRDKSITQNSNPLNINQORGVYQKPNIFSNTRLTYGV 953
 QY 301 EVIIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKLIRTSNS 360

Db 954 EVIIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKLIRTSNS 1013
 QY 361 NSLQGIIVWDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
 Db 1014 NSLQGIIVWDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 1073
 QY 421 FISKEHGWQEN 431
 Db 1074 FISKEHGWQEN 1084
 RESULT 3
 US-10-909-769-28
 ; Sequence 28, Application US/10909769
 ; Publication No. US20060024331A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Fernandez-Salas, Ester
 ; APPLICANT: Steward, Lance E.
 ; APPLICANT: Lin, Wei-Jen
 ; APPLICANT: Aoki, Kei Roger
 ; APPLICANT: Sachs, George
 ; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
 ; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
 ; CURRENT APPLICATION NUMBER: US/10/909,769
 ; CURRENT FILING DATE: 2004-08-02
 ; NUMBER OF SEQ ID NOS: 34
 ; SOFTWARE: Patent in version 3.3
 ; SEQ ID NO 28
 ; LENGTH: 838
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Amino acid sequence of HC
 US-10-909-769-28
 Query Match 80.1%; Score 1833; DB 6; Length 838;
 Best Local Similarity 81.3%; Pred. No. 6e-127;
 Matches 352; Conservative 33; Mismatches 40; Indels 8; Gaps 4;
 QY 1 SYTNDKILILYFNKLYKKIKDMSILDYRNNKPFIDISGYGNSISINGDVYIYSTNRNQF 60
 Db 411 SYTNDKILILYFNKLYKKIKDMSILDYRNNKPFIDISGYGNSISINGDVYIYSTNRNQF 470
 QY 61 GYSSKPSSEVNIQAQNDIINYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
 Db 471 GYSSKPSSEVNIQAQNDIINYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 530
 QY 121 WKISLNYNK---IWTLDQTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 177
 Db 531 WKISLNYNK---IWTLDQTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 590
 QY 178 INGLIDEKSIISLNGDIHVSNDILFKIVGCDNTRVYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 237
 Db 591 INGLIDEKSIISLNGDIHVSNDILFKIVGCDNTRVYGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 650
 QY 238 PPSILKDFWGNLYLNKRYLLNLRTRDKSITQNSNPLNINQORGVYQKPNIFSNTRLTYGV 297
 Db 651 PPSILKDFWGNLYLNKRYLLNLRTRDKSITQNSNPLNINQORGVYQKPNIFSNTRLTYGV 709
 QY 298 TGVEVIIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKLIRTSNS 357
 Db 710 TGVEVIIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKLIRTSNS 765
 QY 358 NSNNSIGQIIVWDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 417
 Db 766 NSNNSIGQIIVWDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 825
 QY 418 FWSFISKEHGWQEN 430
 Db 826 FWSFISKEHGWQEN 838
 RESULT 4

US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
; FILE REFERENCE: ALLE0010-100 (RO12003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-26
Query Match 63.7%; Score 1457.5; DB 6; Length 829;
Best Local Similarity 63.4%; Pred. No. 2e-99;
Matches 276; Conservative 72; Mismatches 70; Indels 17; Gaps 7;
QY 1 SYTDKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISINDGVYIYSTNRQF 60
DB 406 SYTDKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISINDGVYIYSTNRQF 465
QY 61 GYSSKSPSEVNAQNDIIYNGRYONFISFWIRPKYFNK-VNLNNEYTIIDCIRNNNS 119
DB 466 GYNDKLSSEVNISQNDYIIYDNKYKNSISFWIRPKYFNK-VNLNNEYTIIDCIRNNNS 525
QY 120 GWKISLNYKLIWTLODTAGNOKLVFNKYTOMISIDYINKWIFVTITNNLGNRIYIN 179
DB 526 GWKISLNYKLIWTLODTAGNOKLVFNKYTOMISIDYINKWIFVTITNNLGNRIYIN 585
QY 180 GNLDEKISNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDPDTBLGTEIETLYSDPDP 239
DB 586 GNLIDOKSILNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDPDTBLGTEIETLYSDPDP 645
QY 240 PSILKDFWGNLYLLKRYLLNLLRTDKSI-TQNSNPLNINQORGVYQKPIFSNRLYT 298
DB 646 TNLKDFWGNLYLLKRYLLNLLRTDKSI-TQNSNPLNINQORGVYQKPIFSNRLYT 700
QY 299 GVEVIIRK-NGSTDISNTDNFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKILIR 355
DB 701 GIKVKIQRVNSSTN-----DNLVRKNDQVYINFAVSKTHLFLYADTATTNKEKTIKI-- 754
QY 356 TSNSNLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLVASSWYNNIRKVTSSN 415
DB 755 -SSSGNRFNQVVMNSVGNCTMNFQNNNGNIGLLGFKADTVASTWYIYTHMRDHTSN 813
QY 416 GCFWFSFISKEHQWE 430
DB 814 GCFWFSFISKEHQWE 828
RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
; FILE REFERENCE: ALLE0010-100 (RO12003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769

US-10-909-769-18
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-18
Query Match 49.0%; Score 1120.5; DB 6; Length 849;
Best Local Similarity 49.4%; Pred. No. 1.e-74;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;
QY 2 YTNDKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISINDGVYIYSTNRQFG 61
DB 409 YVDNQRLLSTFTTEYIKNIINTSILNLYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 468
QY 62 IYSSKSPSEVNAQNDIIYNGRYONFISFWIRPKYFNK-VNLNNEYTIIDCIRNNNSGW 121
DB 469 LFNLESSKIEVILKNAIVNYSMYENFSTFWIRPKYFNK-VNLNNEYTIIDCIRNNNSGW 527
QY 122 KISLNYKLIWTLODTAGNOKLVFNKYTOMISIDYINKWIFVTITNNLGNRIYIN 181
DB 528 KVSILNYGELIITWLODTQEIQRVVFYKYSOMINISIDYINKWIFVTITNNLGNRIYIN 587
QY 182 LIDKESISNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDPDTBLGTEIETLYSDPDP 240
DB 588 LIDKESISNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDPDTBLGTEIETLYSDPDP 647
QY 241 SILKDFWGNLYLLKRYLLNLLRTDKSI-TQNSNPLNINQORGVYQKPIFSNRL 296
DB 648 GILKDFWGNLYLLKRYLLNLLRTDKSI-TQNSNPLNINQORGVYQKPIFSNRL 707
QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKILIR 356
DB 708 YRGTKFIKKYAS---GNKONIVRNDRVYINNVVYKRYLATNASQAGVEKILSALEI 764
QY 357 SNSNSLGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLVASSWYNNIRKVTSSN 407
DB 765 PDVGN-LSQVVMVMSKNDQGITNCKMNLQNDNGDIFGIFGHOFNFIKLVASWYNNIRK 823
QY 408 IRKNTSSNGCFWFSFISKEHQWE 430
DB 824 IERSRTLCGSWEFIPVDDGWE 846
RESULT 6
US/11/062
; Sequence 3, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
; LENGTH: 1067
; TYPE: PRT
; ORGANISM: Artificial Sequence

FEATURE:
OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-3

Query Match 49.0%; Score 1120.5; DB 7; Length 1067;
Best Local Similarity 49.4%; Pred. No. 1.4e-74;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFIIDISGYGNSISNGDVYIYSTNRNQF 61
DB YVDNQRLSTFTTEYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKNQIQ 686
QY 62 IYSSKPEVNIAQNNDIINGRYQNFISFWIRPKYFNKVLNNEYTIIDCIRNNNSGW 121
DB LFNLESSKIEVILKNAIVYNSMYENFSTFWIRPKYFNISLNNEYTIINCW-ENNSGW 745
QY 122 KISLNYNKIILWTLODTAGNQKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYNGN 181
DB KVSILNYGEIILWTLODTQEIQRVVKYQSMINISDIYNRWIFVTITNNRLNNSKIYNGR 805
QY 182 LIDKESISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVFDTELKTEIETIYSDEPDP 240
DB LIDQKPIISNLGNIHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKOLDYDQNS 865
QY 241 SILKDFWGNLYLKNRYVLLNLTDKSITONS-----NFLNINQOQGVYQKPNIFSNTRL 296
DB GILKDFWGDYLOYPKPYMLNLYDPNKYDVNNVIRGYMYLKGPRGSMVTNTIYNLSSL 925
QY 297 YTGVEVIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEVRLYADISIAKPEKIIKLIRT 356
DB YRGTKFIILKYAS--GNKDNIVRNNDRVYINNVVKNKEYRLATNASQAGVEKILSALEI 982
QY 357 SNSNNSLGQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LVASSWYNN 407
DB PDVGN-LSQVVMVMSKNDQGITNKCKMNLQDNGNDIGFIFGHQFNIAKLVASNNYNRQ 1041
QY 408 IRKNTSSNGCFWFSFISKEHGWOE 430
DB IERSRSLTGCSEWFIPVDGNGE 1064

RESULT 7
US/11/062
Sequence 6, Application US/11062471A
Publication No. US20050255093A1
GENERAL INFORMATION:
APPLICANT: SHONE, Clifford Charles
APPLICANT: SUTTON, John Mark
APPLICANT: HALLIS, Bassam
APPLICANT: SILMAN, Nigel
TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
FILE REFERENCE: 1581.0800001
CURRENT APPLICATION NUMBER: US/11/062,471A
CURRENT FILING DATE: 2005-02-22
PRIOR APPLICATION NUMBER: 09/831,050
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: PCT/GB99/03699
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: GB 9824282.9
PRIOR FILING DATE: 1998-11-05
NUMBER OF SEQ ID NOS: 11
SOFTWARE: Patent In Ver. 2.1
SEQ ID NO 6
LENGTH: 1092
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match 49.0%; Score 1120.5; DB 7; Length 1092;
Best Local Similarity 49.4%; Pred. No. 1.4e-74;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFIIDISGYGNSISNGDVYIYSTNRNQF 61
DB YVDNQRLSTFTTEYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKNQIQ 711
QY 62 IYSSKPEVNIAQNNDIINGRYQNFISFWIRPKYFNKVLNNEYTIIDCIRNNNSGW 121
DB LFNLESSKIEVILKNAIVYNSMYENFSTFWIRPKYFNISLNNEYTIINCW-ENNSGW 770
QY 122 KISLNYNKIILWTLODTAGNQKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYNGN 181
DB KVSILNYGEIILWTLODTQEIQRVVKYQSMINISDIYNRWIFVTITNNRLNNSKIYNGR 830
QY 182 LIDKESISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVFDTELKTEIETIYSDEPDP 240
DB LIDQKPIISNLGNIHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKOLDYDQNS 890
QY 241 SILKDFWGNLYLKNRYVLLNLTDKSITONS-----NFLNINQOQGVYQKPNIFSNTRL 296
DB GILKDFWGDYLOYPKPYMLNLYDPNKYDVNNVIRGYMYLKGPRGSMVTNTIYNLSSL 950
QY 297 YTGVEVIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEVRLYADISIAKPEKIIKLIRT 356
DB YRGTKFIILKYAS--GNKDNIVRNNDRVYINNVVKNKEYRLATNASQAGVEKILSALEI 1007
QY 357 SNSNNSLGQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LVASSWYNN 407
DB PDVGN-LSQVVMVMSKNDQGITNKCKMNLQDNGNDIGFIFGHQFNIAKLVASNNYNRQ 1066
QY 408 IRKNTSSNGCFWFSFISKEHGWOE 430
DB IERSRSLTGCSEWFIPVDGNGE 1089

RESULT 8
US-10-909-769-20
Sequence 20, Application US/10909769
Publication No. US20060024331A1
GENERAL INFORMATION:
APPLICANT: Fernandez-Salas, Ester
APPLICANT: Steward, Lance E.
APPLICANT: Lin, Wei-Jen
APPLICANT: Aoki, Kei Roger
APPLICANT: Sachs, George
TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristics
FILE REFERENCE: ALLE0010-100 (ROI2003-146)
CURRENT APPLICATION NUMBER: US/10/909,769
CURRENT FILING DATE: 2004-08-02
NUMBER OF SEQ ID NOS: 34
SOFTWARE: Patent In version 3.3
SEQ ID NO 20
LENGTH: 900
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-20

Query Match 34.1%; Score 781; DB 6; Length 900;
Best Local Similarity 37.0%; Pred. No. 8.8e-50;
Matches 174; Conservative 90; Mismatches 146; Indels 60; Gaps 14;
QY 1 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFIIDISGYGNSISNGDVYIYSTNRNQF 60
DB TYSNIEILIKIFNKYNSSEILNLIILNRYDRNLDLSGYGAKVEYDGVKX--NDKNQF 508
QY 61 GIYSKPEVNIAQNNDIINGRYQNFISFWIRPKYFNKVLNNEYTIIDCIRNN 117
DB KLTSSADSKIRVTQONIIIFNSMFLDPSVSWIRPKYRNDIIONYIHNEYTIINCWK-N 567
QY 118 NSGKKISLNYNKIILWTLODTAGNQKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIY 177
DB NSGKISIRGNRIILWTLDINGKTSVFEYNEIREIDSEYINRWFFVTITNN-LDNAKIY 626

178 INGNLIDKSTSNLGDHVSNDILFKVGCND-TRYVGIRYKVFDTGLGKTEIETLYSD 236
 627 INGLENDMDIKOGEVINGEITFKDGDVDRQFTQFMKYSFINTQLQNSKIKEYKI 686
 237 EPDPSILKDFMGNYLLNRYLLNL-----LRTDKSI-----TQNSNFLNIN 279
 687 QSYSEYLKDFWGNPLMYNKEYYMFNAGNKNYSYIKLVKDSVGEILIRSKYNQNSNYINR 746
 280 QORGYYQKPNFSTRLYTGVEVIRKNGSDTISNTDNFVRKNDLAYINVVDREVLYA 339
 747 -----NLYGKFIIRRESNQSIN-DDIVRKEDYIHLDLVHHEWRVY 790
 340 ADISIAPEKIIKLIRTSNNSLQIIVM--DSIGNNCTMNFQNN--NGNIGLLGFH 394
 791 AYKYEKEEKLFLISDSNEFYKTEIKEDYQPSYSCOLLFKPKDEESTDDIGLIGIH 850
 395 -----SNNLVASSWYNNI-RKNTSSN-GCFWSPISKEHGHOE 430
 851 RFYESGVLKYYKDYFCISKWYKVEKPKYKSNLGCNWQFIPKDEGWTE 900

RESULT 9
 US/11/062
 ; Sequence 4, Application US/11062471A
 ; Publication No. US20050255093A1
 ; GENERAL INFORMATION:
 ; APPLICANT: SHONE, Clifford Charles
 ; APPLICANT: SUTTON, John Mark
 ; APPLICANT: HALLIS, Bassam
 ; APPLICANT: SILMAN, Nigel
 ; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
 ; FILE REFERENCE: 1581.0800001
 ; CURRENT FILING DATE: 2005-02-22
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: PCT/GB99/03699
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: GB 9824282.9
 ; NUMBER OF SEQ ID NOS: 11
 ; SOFTWARE: Patent In Ver. 2.1
 ; SEQ ID NO 4
 ; LENGTH: 1070
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
 US/11/062,471A-4

Query Match 33.6%; Score 769; DB 7; Length 1070;
 Best Local Similarity 36.0%; Pred. No. 8.2e-49;
 Matches 169; Conservative 88; Mismatches 152; Indels 60; Gaps 13;
 QY 2 YTNKILILYFNKLYKIKDKNSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNFG 61
 622 YTNDFILIEFMFNKYNSEILNLIILNRYKDNLDLSCYGAKVEYDGVDEL--NDKNQFK 679
 QY 62 IYSSKPEVNIQNDIIYNGRYQNFISFWVRIPKYN---KVNLANEYTIIDCIRNN 118
 680 LTSSANSKIRVTQNIIFNSVFLDPSVFWIRIPKYNKGDIQNYIHNEYTIINCWK--NN 738
 QY 119 SGWKISLANYKIITWLDQTAGNOKLVFNQYQMSISDYINKWIFVTITNNRLGNSRIYI 178
 739 SGWKISIRGNRIITWLDINGTKSVFFEYNIREDISEYINRWFFVTITNN--LNNAKIYI 797
 QY 179 NGNLIIDEKSIINLGDHVSNDILFKVGCND-TRYVGIRYKVFDTGLGKTEIETLYSDE 237
 798 NGKLESNTDIKDIREVIANGEIIFKLDGIDRTQFTIMWKYFSIFNTELSQNSIERYKIQ 857
 QY 238 PDPSILKDFMGNYLLNRYLLNL-----LRTDKSI-----TQNSNFLNINQ 280

Db 858 SYSEYLKDFWGNPLMYNKEYYMFNAGNKNYSYIKLVKDSVGEILIRSKYNQNSKYINRD 917
 QY 281 QRGVYQKPNFSTRLYTGVEVIRKNGSDTISNTDNFVRKNDLAYINVVDREVLYA 340
 Db 918 -----LYIGKFIIRKSNQSIN-DDIVRKEDYIYLDFFNLQNEWRVYT 961
 QY 341 DISIAPEKIIKLIRTSNNSLQIIVM--DSIGNNCTMNFQNN--NGNIGLLGFH- 394
 Db 962 YKFKKEEKLFLAPISDSDEFYNTIQIKEYDQPTVSCOLLFKPKDEESTDEIGLIGIHR 1021
 QY 395 -----SNNLVASSWYNNI-RKNTSSN-GCFWSPISKEHGHOE 430
 Db 1022 FYESGIVFEYKDYFCISKWYKVEKPKYKSNLGCNWQFIPKDEGWTE 1070

RESULT 10
 US/11/062
 ; Sequence 7, Application US/11062471A
 ; Publication No. US20050255093A1
 ; GENERAL INFORMATION:
 ; APPLICANT: SHONE, Clifford Charles
 ; APPLICANT: SUTTON, John Mark
 ; APPLICANT: HALLIS, Bassam
 ; APPLICANT: SILMAN, Nigel
 ; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
 ; FILE REFERENCE: 1581.0800001
 ; CURRENT FILING DATE: 2005-02-22
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: PCT/GB99/03699
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: GB 9824282.9
 ; NUMBER OF SEQ ID NOS: 11
 ; SOFTWARE: Patent In Ver. 2.1
 ; SEQ ID NO 7
 ; LENGTH: 1095
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human
 US/11/062,471A-7

Query Match 33.6%; Score 769; DB 7; Length 1095;
 Best Local Similarity 36.0%; Pred. No. 8.5e-49;
 Matches 169; Conservative 88; Mismatches 152; Indels 60; Gaps 13;
 QY 2 YTNKILILYFNKLYKIKDKNSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNFG 61
 647 YTNDFILIEFMFNKYNSEILNLIILNRYKDNLDLSCYGAKVEYDGVDEL--NDKNQFK 704
 Db 62 IYSSKPEVNIQNDIIYNGRYQNFISFWVRIPKYN---KVNLANEYTIIDCIRNN 118
 705 LTSSANSKIRVTQNIIFNSVFLDPSVFWIRIPKYNKGDIQNYIHNEYTIINCWK--NN 763
 QY 119 SGWKISLANYKIITWLDQTAGNOKLVFNQYQMSISDYINKWIFVTITNNRLGNSRIYI 178
 764 SGWKISIRGNRIITWLDINGTKSVFFEYNIREDISEYINRWFFVTITNN--LNNAKIYI 822
 QY 179 NGNLIIDEKSIINLGDHVSNDILFKVGCND-TRYVGIRYKVFDTGLGKTEIETLYSDE 237
 823 NGKLESNTDIKDIREVIANGEIIFKLDGIDRTQFTIMWKYFSIFNTELSQNSIERYKIQ 882
 QY 238 PDPSILKDFMGNYLLNRYLLNL-----LRTDKSI-----TQNSNFLNINQ 280
 883 SYSEYLKDFWGNPLMYNKEYYMFNAGNKNYSYIKLVKDSVGEILIRSKYNQNSKYINRD 942
 QY 281 QRGVYQKPNFSTRLYTGVEVIRKNGSDTISNTDNFVRKNDLAYINVVDREVLYA 340
 Db 943 -----LYIGKFIIRKSNQSIN-DDIVRKEDYIYLDFFNLQNEWRVYT 986
 QY 341 DISIAPEKIIKLIRTSNNSLQIIVM--DSIGNNCTMNFQNN--NGNIGLLGFH- 394

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; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford Charles
; APPLICANT: Quinn, Conrad Padraig
; APPLICANT: Foster, Keith Alan
; APPLICANT: Chaddock, John
; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 20
; LENGTH: 1169
; TYPE: PRT
; ORGANISM: Clostridium botulinum
; US-11-077-550-20

Query Match 29.6%; Score 676.5; DB 7; Length 1169;
Best Local Similarity 40.6%; Pred. No. 5.5e-42;
Matches 141; Conservative 66; Mismatches 99; Indels 41; Gaps 9;

QY 2 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSINGDVYIYSTNRNQFG 61
Db 406 YTKOTILIQVFNYSINSSAILSLSYRGRLIDSGYGATMVGSDVIFNDIGNQFK 465
QY 62 IYSSKPESEVNTAQNNDIYNGRYQNFISFWVRIPKFN---KVNLANEYTIIDCIRNN 118
Db 466 LNNSENSNITAHQSKFVVYDSMFNFISFWVRIPKFN---KVNLANEYTIIDCIRNN 524
QY 119 SGWKISLNNKIITWLODTAGNKKLVNTYQMTISIDYINKWIFVTITNNRLGNSRIYI 178
Db 525 SGWKVSIKGNRIITWLDVNAKSKSIFPEYSIKDNIISDYINKWFSIITNDRLGNANIYI 584
QY 179 NGNLIDEKSIISNLGDIHVSNDILFKIVGND--TRYVGIRYKVPDTLGLKTEIETLYSDE 237
Db 585 NGSLKSKSEKILNLDRIINSNDIDFKLINCTDTTKFVWIKDFNIPGRELNATEVSSLYWIQ 644
QY 238 PDPSILKDFWGNLYLLNRYLLN-----LRTDKSI-----TQNSNLFNINQ 289
Db 645 SSTWTKDFWGNPLRYDTQYLLFNQGNQNIYIKFSKASMGETAPRTNFNAAINQ--- 701
QY 290 IFSNTRYLTYGVEVIRKNGSDISNTDNFVRKNDLAYINVVD--RDVEYRLYADISIAKPE 348
Db 702 ----NLYGLRFLIKKASNRNNNDNIVREGDYIYLNIDNISDESRYVYVLVN--SKEI 755
QY 349 KIILKIRTSNNSLSGQIIVWDSICNNCTANFQ---NNGGNTGLLGF----- 393
Db 756 QTQLFLAPINDDPFYVQLQIKYKYEKTYNQCILCEKQTKTFLGIGKFKVDYGVVMD 815
QY 394 -HSNNLVASSWYNNIRKNTSS--NGCFWGFISKEHGWOE 430
Db 816 TYDNYFCISQWYLERISENINKLRLGNCWQFIPVDEGWE 855

RESULT 12
US-11-077-550-20
; Sequence 20, Application US/11077550
; Publication No. US20050244435A1
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristics
; APPLICANT: Shone, Clifford Charles
; APPLICANT: Quinn, Conrad Padraig
; APPLICANT: Foster, Keith Alan
; APPLICANT: Chaddock, John
; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 30
; LENGTH: 855
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
; US-10-909-769-30

Query Match 32.2%; Score 736.5; DB 6; Length 855;
Best Local Similarity 35.7%; Pred. No. 1.5e-46;
Matches 164; Conservative 76; Mismatches 179; Indels 41; Gaps 10;

QY 2 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSINGDVYIYSTNRNQFG 61
Db 406 YTKOTILIQVFNYSINSSAILSLSYRGRLIDSGYGATMVGSDVIFNDIGNQFK 465
QY 62 IYSSKPESEVNTAQNNDIYNGRYQNFISFWVRIPKFN---KVNLANEYTIIDCIRNN 118
Db 466 LNNSENSNITAHQSKFVVYDSMFNFISFWVRIPKFN---KVNLANEYTIIDCIRNN 524
QY 119 SGWKISLNNKIITWLODTAGNKKLVNTYQMTISIDYINKWIFVTITNNRLGNSRIYI 178
Db 525 SGWKVSIKGNRIITWLDVNAKSKSIFPEYSIKDNIISDYINKWFSIITNDRLGNANIYI 584
QY 179 NGNLIDEKSIISNLGDIHVSNDILFKIVGND--TRYVGIRYKVPDTLGLKTEIETLYSDE 237
Db 585 NGSLKSKSEKILNLDRIINSNDIDFKLINCTDTTKFVWIKDFNIPGRELNATEVSSLYWIQ 644
QY 238 PDPSILKDFWGNLYLLNRYLLN-----LRTDKSI-----TQNSNLFNINQ 289
Db 645 SSTWTKDFWGNPLRYDTQYLLFNQGNQNIYIKFSKASMGETAPRTNFNAAINQ--- 701
QY 290 IFSNTRYLTYGVEVIRKNGSDISNTDNFVRKNDLAYINVVD--RDVEYRLYADISIAKPE 348
Db 702 ----NLYGLRFLIKKASNRNNNDNIVREGDYIYLNIDNISDESRYVYVLVN--SKEI 755
QY 349 KIILKIRTSNNSLSGQIIVWDSICNNCTANFQ---NNGGNTGLLGF----- 393
Db 756 QTQLFLAPINDDPFYVQLQIKYKYEKTYNQCILCEKQTKTFLGIGKFKVDYGVVMD 815
QY 394 -HSNNLVASSWYNNIRKNTSS--NGCFWGFISKEHGWOE 430
Db 816 TYDNYFCISQWYLERISENINKLRLGNCWQFIPVDEGWE 855

RESULT 13
US-10-909-769-24
; Sequence 24, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristics

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, FILE REFERENCE: ALLE0010-100 (ROI2003-146)
,
, CURRENT APPLICATION NUMBER: US/10/909,769
,
, CURRENT FILING DATE: 2004-08-02
,
, NUMBER OF SEQ ID NOS: 34
,
, SOFTWARE: PatentIn version 3.3
,
, SEQ ID NO 24
,
, LENGTH: 834
,
, TYPE: PRT
,
, ORGANISM: Artificial Sequence
,
, FEATURE:
,
, OTHER INFORMATION: Amino acid sequence of
US-10-909-769-24

```

Query Match	25.4%;	Score	580.5;	DB	6;	Length	834;
Best Local Similarity	29.4%;	Pred.	No. 4e-35;				
Matches	140;	Conservative	88;	Mismatches	156;	Indels	93;
Gaps	13;						

Qy	1	SYTNDKTLILYFNKLKKIKDINSITLDMRYENKKFIDISGYSNISINGDVVIYSTNRNQF	60
Db	404	SYTNNSLLKOIINEFYFNSINDSKILSLQNCKNALVDTSGYNAEVRVGDNVOLNTIYTNDF	463
Qy	61	GIYSSEPEVNIAONDDIIYNGRYONPFSIPFWRIPKYFKNVKVLNNXYTIIDICTRNNNS	120
Db	464	KL-SSSGDKIIVLNMLNLISAIYENSVSFWIKISK--DUTNGHNEVTIINSI-EQMSG	519
Qy	121	WKISLNYNKIITWLTQTAGNQKLVFNYTQMISISDYINKWIFVTITNRLGNRSIYING	180
Db	520	WKLIRNGNIETWILLQDVNRKYSLIFDYESLSHTGYTNKWFFVTITNINMGYMKLYING	579
Qy	181	NLIDEKSISNLGDTHVSDNILFKPI-VGCNDTRYGVIRYKFVDFTELGTETEITYLSBDPD	239
Db	580	ELQSQKIEDLDEVKLDKTIIVFGIDENIDENQMLWIRDENIFSKELSNEDINIVVEGQIL	639
Qy	240	PSILKDPGWNVLLYNKRYYLNLARTDKSITQNSNFLNINOQRGVYQKNPFISNTRLTYG	299
Db	640	RNVIKDWGNLPKPEDTEYYIIINDNYIIDRYIAPESNLVL-----VOYPD---RSLKLYTG	690
Qy	300	VEVIIR----KNGSTDISTNTDNFRVK--NDLAYINVVDREVRYLRADISIAKPEKLIK	352
Db	691	NPITIKSVDSKDKNPYSRILINGONIILHMYNRKXMIIRDDTT---IYA-----	735
Qy	353	LIRTSNNSNLGQIIVMDSIGNCNTMPF-----QNNNGCNIGLLGFHSNNLVASSWY---	404
Db	736	-----TQGCECSQCNYALKQLSNLNGYGIGIFSINKVSKNKYCQ	777
Qy	405	-YNNIRKNVTS-----SNGCPWFSTISKEHGHOE	430
Db	778	ISSFRENTMLADIYKPWRFSFKNAYTPVATVNTYETKLLSTSSPWKFIISRDPGWIVE	834

RESULT 14

```

US-11-077-550-141
:
: Sequence 141, Application US/11077550
: Publication No. US2005024435A1
:
: GENERAL INFORMATION:
:
: APPLICANT: Shone, Clifford Charles
: APPLICANT: Quinn, Conrad Padraig
: APPLICANT: Foster, Keith Alan
: APPLICANT: Chaddock, John
: APPLICANT: Marks, Philip
: APPLICANT: Sutton, J. Mark
: APPLICANT: Stancombe, Patrick
: APPLICANT: Wayne, Jonathan
:
: TITLE OF INVENTION: Recombinant Toxin
: FILE REFERENCE: 1581.0130004
: CURRENT APPLICATION NUMBER: US/11/07
: CURRENT FILING DATE: 2005-03-11
: PRIORITY APPLICATION NUMBER: 10/241,596
: PRIOR FILING DATE: 2002-09-12
: PRIOR APPLICATION NUMBER: 09/255,829
: PRIOR FILING DATE: 1999-02-23
: PRIOR APPLICATION NUMBER: PCT/GB97/0
: PRIOR FILING DATE: 1997-08-22
:

```

```

, PRIOR APPLICATION NUMBER: 08/782,893
, PRIOR FILING DATE: 1996-12-27
, PRIOR APPLICATION NUMBER: GB9625996.5
, PRIOR FILING DATE: 1996-12-13
, PRIOR APPLICATION NUMBER: GB9617671.4
, PRIOR FILING DATE: 1996-08-23
, NUMBER OF SEQ ID NOS: 179
, SOFTWARE: PatentIn version 3.1
, SEQ ID NO 141
, LENGTH: 1315
, TYPE: PRT
, ORGANISM: Clostridium tetani
US-11-077-550-141

```

Query Match	24.2%;	Score 553;	DB 7;	Length 1315;
Best Local Similarity	30.2%;	Pred. No. 7.2e-33;		
Matches 139;	Conservative 92;	Mismatches 151;	Indels 78;	Gaps 18;
Qy	19	IKONSILDMRYENKFKIDISIGYSNISINGDVYIY-STNRNQFGIYSSKPEVNIQAQND	77	
Db	881	LKSTILNLNDINNDIISDISGFSNSVITTPDAQLVFGINGKAHLVNNSESSEVIVHKAMD	940	
Qy	78	IIVNGRYQNFISIFSWVRIPKPYFNKVL---NNEYITIIDCIRNN---SGWKISILNLYNK	129	
Db	941	IETNDMFNNFTVFWLRVPK-VSASHLEQYGTWEYSIISMKKXHSISIGSWMVSLKGNV	999	
Qy	130	IITWLODTAGNOKLVFNYTQMISISD---YI-NKWIFFVITINRLGNSRIYINGNLID	184	
Db	1000	LIWTKDSAGEVQIIFR---DLDPKFNAYILANKWVFITITNDRLSSANLYINGVLWG	1054	
Qy	185	EKISINLGDIIHVSNDILFKIVGC-NDTRYVGIIRYFKVDTDELGKTHETIETLYSDEPDPSIL	243	
Db	1055	SAEITGLGAIREDNNITLKLDRCNNNQVYSIDKFRIFCKALNPKGIEKLYTSLTIFL	1114	
Qy	244	KDFGNYLLNKRYILLNLLRTDKSITQNSNFLN---INQQRGVYQKPNIFSNTRYLYTG	299	
Db	1115	RDFWGNPLRYDTTEYILIPVASSKDV-QLKNITDYMYLTNAPSYTGKLNIIYR-RUYNG	1172	
Qy	300	VEVIRKNGSTDISNTDNFVRKNDLAXINVVDREDVEYRLYADISIAKPEKIIKLRTSNS	359	
Db	1173	LKFIIR-YTPNNEIDSFVKSGDF-----IKLY--VSYNNNEHIVGYPKDGNA	1217	
Qy	360	NNSLGQIIVMDSIGNNC-----TWNFQNNNGNGIGLLGFHSNN	397	
Db	1218	FNNLDRIL---RVGNAPGPIYKQMEAVKLRDLKTYSVQLKYDDKKNASLGLVGTNHQ	1274	
Qy	398	-----LVASWYNNYNNRKNTSSNGCFWFSISKEHGW	428	
Db	1275	IGNDPNRDIIIASNWNFHLKDKIL--GCDWYFYPTDEG	1312	

RESULT 15

RESUMI 13
US-10-909-769-22
; Sequence 22, Application US/10909769
; Publication NO. US2006002431A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhance
; FILE REFERENCE: ALL80010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 22
; LENGTH: 842
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC

US-10-909-769-22

```

Query Match      23.9%; Score 546; DB 6; Length 842;
Best Local Similarity 31.5%; Pred. No. 1.4e-32;
Matches 146; Conservative 82; Mismatches 169; Indels 66; Gaps 16;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKPFIDISGYGNSISINGDVYVYSTNRNQF 60
Db 401 SYTNNSLKDIINEYFNNINDSKILSQNRKNTLVDTSYNAEVSSEGDVQLNPIFFPFD 460

Qy 61 GIYSS--KPSEVNTAQNNDIYNGRYQNFISFVWRIPKYPFNKYNLANNEYTIIDCIERNN 118
Db 461 KLGSSGSDRGKVIIVTQENIVNYSWYBSFISFWIRINKWVS--NLPG-YTIIDSVK-NN 516

Qy 119 SGWKISLNNYKLIWTLODTAGNQKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYI 178
Db 517 SGNSIGIISNPLVFTLKQNEDESQSINFSYDISNNAFCY-NKWFVFTVTNNMGMNKIYI 575

Qy 179 NGNLIDEKSIISNLGDIHVSDNILEKIVGCNDTRYV-----GIRYFKVFDTELKTE 229
Db 576 NGKLDITIKVKELTGINFSKTITEINKIPDTGLITSDSDNINMWIRDFYIFAKELDKD 635

Qy 230 IETLYSDEPDPSIILKDFWGNLYLNKRYLLNLLRTDKSITQNSNFLNINQQRGVYQKN 289
Db 636 INILFNSIQYTNVVKDYWGNDLRYNKEYVMYVNDYLNRYMANSRQIVENTR----- 688

Qy 290 IFSNTRYTGVEVIRK-NGSTDISNTDNFVRKNDLAYINVVDREYRL-----YAD 341
Db 689 --NNNDFNEGYKIIIRKRGNTN---DTRVRGGDILYFDMTINNKAYNLFMKNETMYAD 742

Qy 342 -----ISIAKPEKIIKLIRTSNNSNLGQIIVMDSIGNNCTMNFQNN-NGGNI-GL 390
Db 743 NHSTEDIYALGRBQTQDI-----NDNIIQIQPMNNTYYIASQIFKSNFNGENISGI 795

Qy 391 LGPHSNL-VASSWYNNIRKNTSSNGCF-----WSFI 422
Db 796 CSICTYRFRGGDWYRHNLYVPTVKQGNYSLLSTSTHMGFV 838

```

Search completed: March 2, 2006, 01:18:28
Job time : 18.5 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:31:42 ; Search time 68.993 Seconds
(without alignments)
917.057 Million cell updates/sec

Title: US-08-981-087B-2
Perfect score: 770
Sequence: 1 SYTNDKILILYFNKLYKKIK.....LNYNKIIWTLDQTAGNNOKL 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A Geneseq 21:.*
1: geneseqp1980as.*
2: geneseqp1990as.*
3: geneseqp2000as.*
4: geneseqp2001as.*
5: geneseqp2002as.*
6: geneseqp2003as.*
7: geneseqp2003bs.*
8: geneseqp2004as.*
9: geneseqp2005as.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	100.0	144	AAW09015	Immunogen
2	770	100.0	431	AAW09014	Immunogen
3	770	100.0	432	AAW04103	Botulinum
4	770	100.0	432	AAW04096	Botulinum
5	770	100.0	645	AAE07894	Modified
6	770	100.0	645	AAE35692	Dipt HN d
7	770	100.0	657	AAE35693	BoNT/F-HC
8	770	100.0	657	AAE35694	BoNT/F-HC
9	770	100.0	660	AAE07898	Modified
10	770	100.0	685	AAE07893	Modified
11	770	100.0	862	AAE07890	Modified
12	770	100.0	887	AAE07892	Modified
13	770	100.0	979	AAE35713	BoNT/F-HC
14	770	100.0	1032	AAE07901	C. botuli
15	770	100.0	1059	AAE07909	A. mangane
16	770	100.0	1084	AAE079312	A. mangane
17	770	100.0	1092	AAE07900	C. botuli
18	770	100.0	1192	AAE35711	BoNT/F-HC
19	770	100.0	1192	AAE35710	BoNT/F-HC
20	767	99.6	432	AAE07901	Synthetic
21	593.5	77.1	448	AAW68399	Clostridi
22	568.5	73.8	451	AAW68395	Clostridi
23	565.5	73.4	449	AAE079137	Synthetic
24	565.5	73.4	449	AAW04094	Botulinum

25	561.5	72.9	452	2	AAW68396	Clostridi
26	537.5	69.8	419	4	AAW04095	Botulinum
27	378.5	49.2	837	3	AAE079140	Native bo
28	378.5	49.2	847	4	AAW04081	Botulinum
29	378.5	49.2	859	9	ADZ69764	Botulinum
30	378.5	49.2	1067	3	AAE093307	A. mangane
31	378.5	49.2	1092	3	AAE093310	A. mangane
32	378.5	49.2	1296	2	AAE095010	C. botuli
33	378.5	49.2	1296	9	ADW11038	Full leng
34	378.5	49.2	1296	9	ADZ36018	C. botuli
35	378.5	49.2	1296	9	ADZ60275	Clostridi
36	378.5	49.2	1296	9	ADZ69730	Botulinum
37	378.5	49.2	1302	9	ADZ69729	Clostridi
38	378.5	49.2	1302	9	ADZ69831	Inactive
39	377.5	49.0	848	8	ADL92142	Clostridi
40	372.5	48.4	1295	5	AAU09339	Clostridi
41	371.5	48.2	233	3	AAE079143	Native bo
42	371.5	48.2	432	3	AAE079142	Native bo
43	371.5	48.2	437	4	AAW04088	Botulinum
44	371.5	48.2	438	2	AAE095008	Type A ne
45	371.5	48.2	438	2	AAW68389	Clostridi

ALIGNMENTS

RESULT 1
AAW09015
ID AAW09015 standard; protein; 144 AA.
XX

AAW09015;

17-OCT-2003 (revised)

31-MAR-1997 (first entry)

Immunogenic type F botulinum toxin polypeptide (aa848-991).

Botulinum toxin; neurotoxin; BoT/F; immunogen; vaccine; botulinum.

Clostridium botulinum; type F strain Langeland.

WO9641881-A1.

27-DEC-1996.

12-JUN-1996; 96WO-GB001409.

12-JUN-1995; 95GB-00011909.

(MICR-) MICROBIOLOGICAL RES AUTHORITY.

Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;

WPI; 1997-065467/06.

Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

Claim 5; Page 17-18; 37pp; English.

Novel polypeptides (AAW09014-17) respectively comprise amino acids 848-1278, 848-991, 992-1135 and 1136-1278 in the heavy chain of a type F botulinum neurotoxin (BoNT/F). They lack the L chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

Sequence 144 AA;

Query Match 100.0%; Score 770; DB 2; Length 144;

Best Local Similarity 100.0%; Pred. No. 4.2e-69; Mismatches 0; Indels 0; Gaps 0;
Matches 144; Conservative 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
DB 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
DB 61 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
QY 121 WKISLNYNKLIIWTLODTAGNNQKL 144
DB 121 WKISLNYNKLIIWTLODTAGNNQKL 144

RESULT 2

AAW09014
ID AAW09014 standard; protein; 431 AA.
XX AC AAW09014;
XX 17-OCT-2003 (revised)
DT 31-MAR-1997 (first entry)
XX Immunogenic type F botulinum toxin heavy chain (aa848-1278).
DE Botulinum toxin; neurotoxin; BoT/F; immunogen; vaccine; botulism.
XX KW Clostridium botulinum; type F strain Langeland.
XX OS
XX PN WO9641881-A1.
XX PD 27-DEC-1996.
XX PF 12-JUN-1996; 96WO-GB001409.
XX PR 12-JUN-1995; 95GB-00011909.
XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX PI Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;
XX WPI; 1997-065467/06.
DR N-PSDB; AAT48100.

Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

Claim 5; Page 16-17; 37pp; English.

A polypeptide (AAW09014) comprises the heavy chain (amino acids 848-1278) of a type F botulinum neurotoxin (BoNT/F), and can be produced using a synthetic gene (AAT48101) based on the natural gene sequence (AAT48100) for the heavy chain. The polypeptides and its fragments (see also AAW09015-17) lack the light chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transfected host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

Sequence 431 AA;

Query Match 100.0%; Score 770; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 1.7e-68;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
DB 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60

QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
DB 61 GIYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
QY 121 WKISLNYNKLIIWTLODTAGNNQKL 144
DB 121 WKISLNYNKLIIWTLODTAGNNQKL 144

RESULT 3

AAW04103
ID AAW04103 standard; protein; 432 AA.
XX AC AAW04103;
XX 11-APR-2001 (first entry)
XX Botulism toxin heavy chain C-terminal sequence (serotype F).
DE Botulism; toxin; neurotoxin; heavy chain; recombinant expression;
XX KW recombinant vector; antigen; immune response; vaccine; bacterium;
XX infection.
XX OS Synthetic.
OS Clostridium botulinum.
XX PN WO200067700-A2.
XX PD 16-NOV-2000.
XX PF 12-MAY-2000; 2000WO-US012890.
XX PR 12-MAY-1999; 99US-0133865P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133867P.
PR 12-MAY-1999; 99US-0133868P.
PR 12-MAY-1999; 99US-0133869P.
PR 12-MAY-1999; 99US-0133873P.
PR 29-JUL-1999; 99US-0146192P.

(USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

WPI; 2001-016048/02.

N-PSDB; AAA54499.

New nucleic acids encoding the carboxy- or amino-terminal portions of the heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine against botulism.

Disclosure; Fig 18b; 73pp; English.

Botulism neurotoxins are translated as a single 150 kDa polypeptide chain and then posttranslationally nicked, forming a dichain consisting of a 100 kDa heavy chain and a 50 kDa light chain which remain linked by a disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino-terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT) can be used in recombinant expression vectors and expressed in transformed cells to produce peptide antigens useful for eliciting an immune response to give protective immunity against botulinum neurotoxin, which causes botulism. The nucleic acids are expressible in a recombinant organism such as *Escherichia coli* or *Pichia pastoris*. The use of recombinant nucleic acids are advantageous since it eliminates the need to culture large quantities of hazardous toxin-producing bacterium. Production yield from the genetically engineered product is also high and cost of production is lower. The nucleic acids can be derived from Clostridium botulinum serotypes A-G

Sequence 432 AA;

Query Match 100.0%; Score 770; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.7e-68;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 61
Qy 61 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 120
Db 62 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 121
Qy 121 WKISLNYNKIITWLTQDTAGNNQKL 144
Db 122 WKISLNYNKIITWLTQDTAGNNQKL 145

RESULT 4
AAB04096
ID AAB04096 standard; protein; 432 AA.
XX
AC AAB04096;
XX
XX
DT 11-APR-2001 (first entry)
XX
DE Botulinum toxin heavy chain C-terminal sequence (serotype F).
XX
KW Botulinum; toxin; neurotoxin; heavy chain; recombinant expression;
KW recombinant vector; antigen; immune response; vaccine; bacterium;
KW infection.
XX
XX Synthetic.
OS Clostridium botulinum.
OS
XX
XX WO200067700-A2.
XX
XX 16-NOV-2000.
XX
XX 12-MAY-2000; 2000WO-US012890.
XX
XX 12-MAY-1999; 99US-0133865P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133867P.
PR 12-MAY-1999; 99US-0133868P.
PR 12-MAY-1999; 99US-0133869P.
PR 12-MAY-1999; 99US-0133870P.
PR 12-MAY-1999; 99US-0133871P.
PR 29-JUL-1999; 99US-0146192P.
XX
XX (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.
PA
XX
XX Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;
XX
XX WPI; 2001-016048/02.
DR N-PSDB; AAA54490.
XX
XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
PT against botulinum.
XX
XX Claim 3; Fig 9b; 73pp; English.
XX
XX Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain
CC and then posttranslationally nicked, forming a dichain consisting of a
CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)
CC can be used in recombinant expression vectors and expressed in
CC transformed cells to produce peptide antigens useful for eliciting an
CC immune response to give protective immunity against botulinum neurotoxin,
CC which causes botulism. The nucleic acids are expressible in a recombinant
CC organisms such as Escherichia coli or Pichia pastoris. The use of
CC recombinant nucleic acids are advantageous since it eliminates the need
CC to culture large quantities of hazardous toxin-producing bacterium.
CC Production yield from the genetically engineered product is also high and
CC cost of production is lower. The nucleic acids can be derived from

CC Clostridium botulinum serotypes A-G
XX
SQ Sequence 432 AA;
Query Match 100.0%; Score 770; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.7e-68;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 61
Qy 61 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 120
Db 62 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 121
Qy 121 WKISLNYNKIITWLTQDTAGNNQKL 144
Db 122 WKISLNYNKIITWLTQDTAGNNQKL 145

RESULT 5
AAE07894
ID AAE07894 standard; protein; 645 AA.
XX
AC AAE07894;
XX
DT 11-SEP-2003 (revised)
DT 01-NOV-2001 (first entry)
XX
XX Modified clostridial heavy chain fragment #1.
DE
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW diphtheria neurotoxin; botulinum neurotoxin type F; BoNT/F.
XX
XX Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Chimeric.
XX
XX WO200158936-A2.
PN
PD 16-AUG-2001.
XX
XX 04-DEC-2000; 2000WO-GB004644.
XX
PR 02-DEC-1999; 99GB-00028530.
PR 07-APR-2000; 2000GB-00008658.
XX
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
PA
XX Shone CC, Sutton JM, Silman N;
XX
XX WPI; 2001-514643/56.
DR
XX New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.
XX
XX Example 2; Page 44; 50pp; English.
PS
XX The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain as
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC HC) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours

CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain fragment. This sequence is
 CC constructed by fusing the binding domain of botulinum neurotoxin type F
 CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
 CC 11-SEP-2003 to standardise OS field)

XX Sequence 645 AA;

SQ Query Match 100.0%; Score 770; DB 4; Length 645;
 Best Local Similarity 100.0%; Pred. No. 2.9e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILLYFNKLYKKIKDMSILDYENKFKDIDSGYNSISINGDVYIYSTNRNQF 60
 DB 215 SYTNDKILLYFNKLYKKIKDMSILDYENKFKDIDSGYNSISINGDVYIYSTNRNQF 274
 QY 61 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
 DB 275 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 334
 QY 121 WKISLNYNKIIWTLQDTAGNNQKL 144
 DB 335 WKISLNYNKIIWTLQDTAGNNQKL 358

RESULT 6

AAE35692
 ID AAE35692 standard; protein; 645 AA.

AC AAE35692;

XX 23-OCT-2003 (revised)

DT 17-JUN-2003 (first entry)

DE Dipt HN domain-BoNT/F-Hc fusion construct.

XX Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW translocation domain; HN domain; Dipt; Hc; botulinum type F neurotoxin;
 KW binding domain; BoNT/F.

XX Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Chimeric.

XX WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

XX Example 12; Page 57-60; 130pp; English.

XX The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory

CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (Dip-HN domain) and botulinum type F neurotoxin from Clostridium
 CC botulinum. This sequence is used in the exemplification of the invention.
 CC (Updated on 23-OCT-2003 to standardise OS field)

SQ Sequence 645 AA;

Query Match 100.0%; Score 770; DB 6; Length 645;
 Best Local Similarity 100.0%; Pred. No. 2.9e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILLYFNKLYKKIKDMSILDYENKFKDIDSGYNSISINGDVYIYSTNRNQF 60
 DB 215 SYTNDKILLYFNKLYKKIKDMSILDYENKFKDIDSGYNSISINGDVYIYSTNRNQF 274
 QY 61 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
 DB 275 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 334
 QY 121 WKISLNYNKIIWTLQDTAGNNQKL 144
 DB 335 WKISLNYNKIIWTLQDTAGNNQKL 358

RESULT 7

AAE35693
 ID AAE35693 standard; protein; 657 AA.

AC AAE35693;

XX 17-JUN-2003 (first entry)

DE BoNT/F-Hc-Dipt HN domain-thrombin linker fusion construct.

XX Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; Dipt; Hc; binding domain;
 KW botulinum type F neurotoxin.

XX Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Unidentified.

OS Chimeric.

XX WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

DE Modified clostridial heavy chain-superoxide dismutase conjugate #2.
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW superoxide dismutase; SOD; diphtheria neurotoxin;
KW botulinum neurotoxin type F; BoNT/F.
XX Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.
XX WO200158936-A2.
XX 16-AUG-2001.
XX 04-DEC-2000; 2000WO-GB004644.
XX 02-DEC-1999; 99GB-00028530.
XX 07-APR-2000; 2000GB-00008658.
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX Shone CC, Sutton JM, Silman N;
XX WPI; 2001-514643/56.
XX New non toxic polypeptide for delivery of a therapeutic agent for the
XX treatment of a CNS disorder comprising a binding domain that translocates
XX the therapeutic agent into the neuronal cells.
XX Example 9; Page 40; 50pp; English.
XX The invention relates to a non toxic polypeptide, for delivery of a
XX therapeutic agent to a neuronal cell, which comprises a binding domain
XX (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
XX HC) that binds to the neuronal cell and a translocation domain (amino
XX terminal half of HC, designated as HN), that translocates the therapeutic
XX agent into the neuronal cell, where the translocation domain is not a HN
XX domain of a clostridial neurotoxin and is not a fragment or derivative of
XX a HN domain of a clostridial toxin. Polypeptides of the invention are
XX useful for the treatment of a disease state associated with neuronal
XX cells. The polypeptide constructs are useful for delivering therapeutic
XX substances to neuronal cells. They are useful to treat disorders of the
XX CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
XX and infection. They are also useful in gene therapy. The present sequence
XX is modified clostridial heavy chain-superoxide dismutase conjugate. This
XX conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
XX Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
XX translocation domain from diphtheria neurotoxin and a neuronal cell-
XX specific binding domain from botulinum neurotoxin type F (BoNT/F)
SQ Sequence 862 AA;
Query Match 100.0%; Score 770; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 4.2e-68;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKTIDISGYSNLSINGDVIIYSTNRNQF 60
DB 432 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKTIDISGYSNLSINGDVIIYSTNRNQF 491
QY 61 GYSSKPSSEVNIAQNNDIIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120
DB 492 GYSSKPSSEVNIAQNNDIIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 551
QY 121 WKISLNNYKIIWTLQDTAGNQKL 144
DB 552 WKISLNNYKIIWTLQDTAGNQKL 575
RESULT 12

AAE07892
ID AAE07892 standard; protein; 887 AA.
XX
AC AAE07892;
XX
DT 01-NOV-2001 (first entry)
XX
DE Modified clostridial heavy chain-superoxide dismutase conjugate #4.
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW superoxide dismutase; SOD; diphtheria neurotoxin; human;
KW botulinum neurotoxin type F; BoNT/F.
XX Homo sapiens.
OS Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.
XX WO200158936-A2.
XX 16-AUG-2001.
XX 04-DEC-2000; 2000WO-GB004644.
XX 02-DEC-1999; 99GB-00028530.
XX 07-APR-2000; 2000GB-00008658.
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX Shone CC, Sutton JM, Silman N;
XX WPI; 2001-514643/56.
XX New non toxic polypeptide for delivery of a therapeutic agent for the
XX treatment of a CNS disorder comprising a binding domain that translocates
XX the therapeutic agent into the neuronal cells.
XX Example 9; Page 42; 50pp; English.
XX The invention relates to a non toxic polypeptide, for delivery of a
XX therapeutic agent to a neuronal cell, which comprises a binding domain
XX (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
XX HC) that binds to the neuronal cell and a translocation domain (amino
XX terminal half of HC, designated as HN), that translocates the therapeutic
XX agent into the neuronal cell, where the translocation domain is not a HN
XX domain of a clostridial neurotoxin and is not a fragment or derivative of
XX a HN domain of a clostridial toxin. Polypeptides of the invention are
XX useful for the treatment of a disease state associated with neuronal
XX cells. The polypeptide constructs are useful for delivering therapeutic
XX substances to neuronal cells. They are useful to treat disorders of the
XX CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
XX and infection. They are also useful in gene therapy. The present sequence
XX is modified clostridial heavy chain-superoxide dismutase conjugate. This
XX conjugate comprises a mitochondrial leader sequence from human Mn-
XX superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,
XX linker that can be cleaved by thrombin, translocation domain from
XX diphtheria neurotoxin and a neuronal cell-specific binding domain from
XX botulinum neurotoxin type F (BoNT/F)
SQ Sequence 887 AA;
Query Match 100.0%; Score 770; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 4.4e-68;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKTIDISGYSNLSINGDVIIYSTNRNQF 60
DB 457 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKTIDISGYSNLSINGDVIIYSTNRNQF 516
QY 61 GYSSKPSSEVNIAQNNDIIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120

DB 517 GYSSKPEVNIQNDIIYNGRYQNFISFWVRIPKYNKVLNANEYTIIDCIRNNSG 576
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 DB 577 WKISLNYNKIIWTLODTAGNNQKL 600

RESULT 13
 ID AAE35713 standard; protein; 979 AA.
 AC AAE35713;
 XX 17-JUN-2003 (first entry)
 DT
 DE BoNT/F-Hc-DipT HN domain-factor Xa linker-YoPT protein fusion construct.
 KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; prion disease; Alzheimer's disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;
 KW botulinum type F neurotoxin; targeted effector protein; YoPT.
 XX
 OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Yersinia pestis.
 OS Unidentified.
 OS Chimeric.
 XX
 PN WO200296467-A2.
 XX
 XX 05-DEC-2002.
 XX
 XX 21-MAY-2002; 2002WO-GB002384.
 XX
 XX 24-MAY-2001; 2001GB-00012687.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Sutton JM, Shone CC;
 XX
 DR WPI; 2003-167247/16.
 XX
 XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX
 PS Example 12; Page 110-114; 130pp; English.
 XX
 CC The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis; release of an inflammatory
 CC mediator from cells; division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating prion disease, Alzheimer's disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide and
 CC Yersinia pestis targeted effector protein YoPT. This sequence is used in
 CC the exemplification of the invention
 XX

SQ Sequence 979 AA;
 Query Match 100.0%; Score 770; DB 6; Length 979;
 Best Local Similarity 100.0%; Pred. No. 5e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDNRKENNFIDISGYGSINISINGDVYIYSTNRNQF 60
 DB 549 SYTNDKILILYFNKLYKKIKDINSILDNRKENNFIDISGYGSINISINGDVYIYSTNRNQF 608
 QY 61 GIYSSKPEVNIQNDIIYNGRYQNFISFWVRIPKYNKVLNANEYTIIDCIRNNSG 120
 DB 609 GIYSSKPEVNIQNDIIYNGRYQNFISFWVRIPKYNKVLNANEYTIIDCIRNNSG 668
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 DB 669 WKISLNYNKIIWTLODTAGNNQKL 692

RESULT 14
 AAE07901
 ID AAE07901 standard; protein; 1032 AA.
 XX
 AC AAE07901;
 XX
 DT 01-NOV-2001 (first entry)
 XX
 DE
 XX
 XX C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 OS Clostridium botulinum.
 XX
 PN WO200158936-A2.
 XX
 PD 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 PF
 XX 02-DEC-1999; 99GB-00028530.
 PR
 XX 07-APR-2000; 2000GB-00008658.
 PR
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA
 XX Shone CC, Sutton JM, Silman N;
 PI
 XX WPI; 2001-514643/56.
 DR
 XX
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX
 PS Example 2; Page 48; 50pp; English.
 XX
 CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is C. botulinum C2 enterotoxin translocation domain with botulinum
 CC neurotoxin type F (BoNT/F) binding domain used in the exemplification of
 CC the invention
 XX

SQ Sequence 1032 AA;
 Query Match 100.0%; Score 770; DB 4; Length 1032;
 Best Local Similarity 100.0%; Pred. No. 5.4e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 602 SYTNDKILILYFNKLYKKIKDINSILDYENKFKIDISGYGNSISINGDVYIYSTNRNQF 661
 QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
 DB 662 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 721
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 DB 722 WKISLNYNKIIWTLODTAGNNQKL 745

RESULT 15
 AAY93309
 ID AAY93309 standard; protein; 1059 AA.
 XX
 AC AAY93309;
 DT 04-SEP-2000 (first entry)
 DE A manganese superoxide dismutase (Mn-SOD) construct.
 XX
 KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
 KW neuronal cell targeting component; NCTC; neuronal disease;
 KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
 KW Huntington's disease; motor neurone disease;
 KW botulinum neurotoxin serotype F.
 XX
 OS Synthetic.
 OS Geobacillus stearothermophilus.
 OS Clostridium botulinum.
 XX
 XN WO200028041-A1.
 XX
 PD 18-MAY-2000.
 XX
 PF 05-NOV-1999; 99WO-GB003699.
 XX
 PR 05-NOV-1998; 98GB-00024282.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Hallis B, Silman N;
 XX
 DR WPI; 2000-376553/32.
 XX
 PT Novel composition, comprising superoxide dismutase linked by a cleavable
 PT linker to a neuronal cell targeting component useful for delivering
 PT superoxide dismutase to neuronal cells to treat ischemia.
 XX
 PS Disclosure; Page 48-51; 65pp; English.
 XX
 CC The present sequence represents a construct of the invention, comprising
 CC a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
 CC be cleaved by thrombin, and a heavy chain derived from botulinum
 CC neurotoxin serotype F. The specification describes a composition for
 CC delivery of SOD to neuronal cells. The composition comprises SOD linked,
 CC by a cleavable linker, to a neuronal cell targeting component (NCTC).
 CC This component has a domain that binds to a neuronal cell and a domain
 CC that translocates the SOD of the composition into the neuronal cell.
 CC After translocation, the linker is cleaved to release the SOD. The
 CC composition is useful for treating neuronal diseases caused or augmented
 CC by oxidative stress, such as ischemic stroke, trauma, Parkinson's
 CC disease, Huntington's disease and motor neurone diseases
 XX
 SQ Sequence 1059 AA;

Query Match 100.0%; Score 770; DB 3; Length 1059;
 Best Local Similarity 100.0%; Pred. No. 5.5e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 629 SYTNDKILILYFNKLYKKIKDINSILDYENKFKIDISGYGNSISINGDVYIYSTNRNQF 688
 QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
 DB 689 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 748
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 DB 749 WKISLNYNKIIWTLODTAGNNQKL 772

Search completed: March 2, 2006, 00:38:55
 Job time : 68.993 secs

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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:39:17 ; Search time 12.0278 Seconds
(without alignments)
1151.928 Million cell updates/sec

Title: US-08-981-087B-2
Perfect score: 770
Sequence: 1 SYTNDKILILYFNKLYKKIK.....LNYNKIIWTLODTAGNNQKL 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR 80:*
1: Pirl:*
2: Pirl2:*
3: Pirl3:*
4: Pirl4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	100.0	366	2 S48110	neurotoxin type F
2	626.5	81.4	369	2 S48109	neurotoxin type F
3	626.5	81.4	1274	2 I40813	neurotoxin type F
4	625	81.2	1268	2 S33411	botulinum neurotox
5	571.5	74.2	367	2 S48106	neurotoxin type E
6	571.5	74.2	1252	2 S21178	botulinum neurotox
7	568.5	73.8	1251	2 JH0256	botulinum neurotox
8	378.5	49.2	1296	1 BTCLAB	bontoxilysin (EC 3
9	377.5	49.0	1296	2 I40645	botulinum neurotox
10	355	46.1	1291	1 A48940	bontoxilysin (EC 3
11	348	45.2	1291	2 I40631	non-proteolytic bo
12	319	41.4	1297	2 S39791	neurotoxin - Clost
13	250	32.5	1291	2 A49777	botulinum neurotox
14	250	32.5	1291	2 S46431	botulinum neurotox
15	249.5	32.4	1276	2 S11455	botulinum neurotox
16	244	31.7	1285	2 S70582	botulinum neurotox
17	206	26.8	1315	1 BTCLTN	tentoxilysin (EC 3
18	201	26.1	122	2 A53878	type E neurotoxin
19	125	16.2	1162	2 I40817	botulinum toxin no
20	117	15.2	480	2 B45600	asparagine-rich bl
21	115	14.9	1196	2 JQ1467	toxin, nontoxic co
22	115	14.9	1196	2 S46430	botulinum neurotox
23	114	14.8	1162	2 A47708	progenitor toxin n
24	113	14.7	1193	2 S68218	botulinum neurotox
25	111.5	14.5	457	2 C82911	hypothetical prote
26	111.5	14.5	743	2 T38983	probable gtpase ac
27	110	14.3	1193	2 JC4901	nontoxic-nonhemag
28	105	13.6	430	2 T28318	ORF MSV157 hypothe
29	100.5	13.1	464	1 MNVUWC	nonstructural prot

ALIGNMENTS

RESULT 1

S48110
neurotoxin type F - Clostridium botulinum (fragment)
C:Species: Clostridium botulinum
C:Date: 14-Jul-1995 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C:Accession: S48110
R:Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A:Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
A:Reference number: S48103; MUID:94013372; PMID:8408542
A:Accession: S48110
A:Status: preliminary; translation not shown
A:Molecule type: DNA
A:Residues: 1-366 <CAM>
A:Cross-references: UNIPROT:Q57236; UNIPARC:UPI000016EA7C; EMBL:X70821; NID:9407792; PID
C:Superfamily: tetanus toxin
C:Keywords: neurotoxin

Query Match 100.0% Score 770; DB 2; Length 366;
Best Local Similarity 100.0%; Pred. No. 3.5e-54; Indels 0; Gaps 0;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	1	SYTNDKILILYFNKLYKKIKDMSILDMRYENKKEFIDISGYGNSISGVDVYIYSTNRNQF	60
DB	214	SYTNDKILILYFNKLYKKIKDMSILDMRYENKKEFIDISGYGNSISGVDVYIYSTNRNQF	273
QY	61	GIYSSKPSVNIQAQNNDIIYNGRYQNFISFWVRIPKYNKVNLMNEYTIIDCIRNNNSG	120
DB	274	GIYSSKPSVNIQAQNNDIIYNGRYQNFISFWVRIPKYNKVNLMNEYTIIDCIRNNNSG	333
QY	121	WKISLNYNKIIWTLODTAGNNQKL	144
DB	334	WKISLNYNKIIWTLODTAGNNQKL	357

RESULT 2

S48109
neurotoxin type F - Clostridium botulinum (fragment)
C:Species: Clostridium botulinum
C:Date: 12-Feb-1998 #sequence_revision 20-Feb-1998 #text_change 09-Jul-2004
C:Accession: S48109
R:Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A:Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
A:Reference number: S48103; MUID:94013372; PMID:8408542
A:Accession: S48109
A:Status: preliminary; nucleic acid sequence not shown; translation not shown
A:Molecule type: DNA
A:Residues: 1-369 <CAM>
A:Cross-references: UNIPROT:P30996; UNIPARC:UPI000016EA7B; EMBL:X70820; NID:9407790; PID
C:Superfamily: tetanus toxin
C:Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993

A;Title: Sequences of the botulinum neurotoxin E derived from Clostridium botulinum type A;Reference number: JH0256; MUID:92181428; PMID:1543481

A;Accession: JH0256

A;Status: nucleic acid sequence not shown

A;Molecule type: DNA

A;Residues: 1-27,'E','29-1251<POU>

A;Cross-references: UNIPROT:P30995; UNIPARC:UPI000017670D; EMBL:X62088; NID:g40379

A;Experimental source: strains ATCC 43181 and ATCC 43755

R:Fujii, N.; Kimura, K.; Yashiki, T.; Indoh, T.; Murakami, T.; Tsuzuki, K.; Yokosawa, N.

J. Gen. Microbiol. 137, 519-525, 1991

A;Title: Cloning of a DNA fragment encoding the 5'-terminus of the botulinum type E toxin.

A;Reference number: S16145; MUID:91237316; PMID:2033376

A;Accession: S16145

A;Status: preliminary

A;Molecule type: DNA

A;Residues: 1-229,'M','231-252<FUJ>

A;Cross-references: UNIPARC:UPI000016EA8F; EMBL:X53180; NID:g40407; PIDN:CAA37321.1; PID

A;Experimental source: strain BL6340

C;Comment: The clostridial neurotoxins are toxins that inhibit neurotransmitter release

C;Comment: The heavy chain mediates the binding of toxin to cell receptors while the lig

C;Superfamily: tetanus toxin

C;Keywords: neurotoxin

F;2-422/Product: botulinum neurotoxin type E light chain #status predicted <LiG>

F;423-1251/Product: botulinum neurotoxin type E heavy chain #status predicted <HEA>

F;412-426/Disulfide bonds: #status predicted

Query Match 73.8%; Score 569.5; DB 2; Length 1251;
Best Local Similarity 71.0%; Pred. No.1.6e-37;
Matches 103; Conservative 26; Mismatches 15; Indels 1; Gaps 1;

Qy 1 SYTDNDKILLYFNKLYKKIKONSILDMRYENKNKFIDISGVGSNISINGDVYIYSTNRNQF 60
|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:
Db 829 SYTDDKILISVFNKFFPKRIKSSVLNMRYNKDYVTDSVDNSININGDVKYPTNKNQF 888
|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:
Qy 61 GIYSKSPSEVNIAQNNDIIYNGYONFSISFWVRIPKPFNK-VNLANNETIIDCIRNNNS 119
|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:
Db 889 GIYNDKLSEVAISQNDYIIYDNKYKFSISFWVRIPNYDKIVNVNNEYTIINCMDRNNNS 948
|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:
Qy 120 GWKISLNYYKIITWLTQADGNNOQL 144
|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:
Db 949 GWKVSLSNEIITWLTQDSGINOQL 973
|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:|||:

RESULT 8

BTC LAB

N;Alternate names: botulinum neurotoxin type A

C;Species: Clostridium botulinum

C;Date: 31-Mar-1993 #sequence revision 31-Mar-1993 #text change 09-Jul-2004

C;Accession: A35294; S09492; S68220; A33401; A53884; A60025; A27000

R;Binz, T.; Kurazono, H.; Wille, M.; Frevert, J.; Weirath, K.; Niemann, H.

J. Biol. Chem. 265, 9153-9158, 1990

A;Title: The complete sequence of botulinum neurotoxin type A and comparison with other

A;Reference number: A35294; MUID:90264400; PMID:2160960

A;Accession: A35294

A;Molecule type: DNA

A;Residues: 1-1296<BIN>

A;Cross-references: UNIPROT:P10845; UNIPARC:UPI0000001386; GB:M30196; NID:g144864; PIDN

A;Experimental source: strain 62A, subtype A

R;Thompson, D.E.; Brehm, J.K.; Oulttram, J.D.; Swinfield, T.J.; Shone, C.C.; Atkinson, T

Eur. J. Biochem. 189, 73-81, 1990

A;Title: The complete amino acid sequence of the Clostridium botulinum type A neurotoxin

A;Reference number: S09492; MUID:90235864; PMID:2185020

A;Accession: S09492

A;Molecule type: DNA

A;Residues: 1,'Q','3-26','V','28-1296<THO>

A;Cross-references: UNIPARC:UPI000003409D; EMBL:X52066; NID:g40381; PIDN:CAA36289.1; PID

A;Experimental source: NCTC 2916

R;Fujiita, R.; Fujinaga, Y.; Inoue, K.; Nakajima, H.; Kumon, H.; Oguma, K.

PBS Lett. 376, 41-44, 1995

A;Title: Molecular characterization of two forms of nontoxic-nonhemagglutinin component

A;Reference number: S67988; MUID:96096783; PMID:8521962

A;Accession: S68220

A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-12 <FU>
A;Cross-references: UNIPARC:UPI0000173655; EMBL:D67030; DDBJ:D50421; NID:g2160224
R;Batley, M.J.; Somers, E.; DasGupta, B.R.
Biochem. Biophys. Res. Commun. 162, 1388-1395, 1989
A;Title: Characterization of botulinum type A neurotoxin gene: delineation of the N-term
A;Reference number: A33401; MUID:89350959; PMID:2669749
A;Accession: A33401
A;Molecule type: DNA
A;Residues: 1-35 <BET>
A;Cross-references: UNIPARC:UPI000016EA84; GB:M27892; NID:gl44880; PIDN:AAA23269.1; PID:
R;Gimenez, J.A.; DasGupta, B.R.
J. Protein Chem. 12, 351-363, 1993
A;Title: Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72, 45, 42, and
A;Reference number: A53884; MUID:94000342; PMID:8397793
A;Accession: A53884
A;Status: preliminary
A;Molecule type: protein
A;Residues: 867-880,1148-1217,'Y',1219 <GIM>
A;Cross-references: UNIPARC:UPI00000BBB24; UNIPARC:UPI00000173656
A;Experimental source: strain Hall
A;Note: sequence extracted from NCBI backbone (NCBIP:139159); sequence modified after ex
R;DasGupta, B.R.; Dekleva, M.L.
Biochimie 72, 661-664, 1990
A;Title: Botulinum neurotoxin type A: sequence of amino acids at the N-terminus and aro
A;Reference number: A60025; MUID:91120847; PMID:2126206
A;Accession: A60025
A;Molecule type: protein
A;Residues: 2-6;445-453,'X',455-457 <DAS1>
A;Cross-references: UNIPARC:UPI0000173657; UNIPARC:UPI0000173658
R;DasGupta, B.R.; Foley, J.; Niece, R.
Biochemistry 26, 4162, 1987
A;Title: Partial sequence of the light chain of botulinum neurotoxin type A.
A;Reference number: A27000
A;Accession: A27000
A;Molecule type: protein
A;Residues: 2-47 <DAS2>
A;Cross-references: UNIPARC:UPI0000173659
R;Binz, T.; Blasi, J.; Yamasaki, S.; Baumeister, A.; Link, E.; Suedhof, T.C.; Jahn, R.;
J. Biol. Chem. 269, 1617-1620, 1994
A;Title: Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.
A;Reference number: A49708; MUID:94124495; PMID:8294407
A;Contents: annotation
C;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap
C;Genetics:
A;Gene: atx; botA
C;Function:
A;Description: catalyzes hydrolysis of an Asn-Arg peptide bond in synaptosomal-associate
C;Superfamily: tetanus toxin
C;Keywords: disulfide bond; hydrolase; metalloproteinase; neurotoxin; transmembrane prot
F;2-444/Product: bontoxilysin A light chain #status experimental <LIGHT>
F;445-1296/Product: bontoxilysin A heavy chain #status experimental <HVY>
F;223,227/Binding site: zinc (His) #status predicted
F;224/Active site: Glu #status predicted

Query Match 49.2%; Score 378.5; DB 1; Length 1296;
Best Local Similarity 48.3%; Pred. No. 2.3e-22;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;
2 YTNKILILYFNKLYKKIKNSILDMRYENKFDISGYGNSINGDVYIYSTRNQFG 61
856 YVDNQRLLSTFTEYIKNIINTSILNLYESNHLIDLSRYAKINIGSKVNFDPIDKQIQ 915
62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNEYTIIDICRNNNSG 121
916 LFNLESSKIEVLKNAIVNYSMYENFSTFWIRIPKYFNKVLNNEYTIINCENNSGW 974
122 KISLNNKIIITWLODTAGNNQKL 144
975 KVSILNYGEIITWLODTQEIQRV 997

RESULT 9
I40645
botulinum neurotoxin type A - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004
C;Accession: I40645
R;Willems, A.; East, A.K.; Lawson, P.A.; Collins, M.D.
Res. Microbiol. 144, 547-556, 1993
A;Title: Sequence of the gene coding for the neurotoxin of Clostridium botulinum type A
A;Reference number: I40645; MUID:94143603; PMID:8310180
A;Accession: I40645
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-1296 <RES>
A;Cross-references: UNIPROT:Q45894; UNIPARC:UPI000016EA88; EMBL:X73423; NID:g507070; PI
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 49.0%; Score 377.5; DB 2; Length 1296;
Best Local Similarity 49.0%; Pred. No. 2.8e-22;
Matches 70; Conservative 29; Mismatches 43; Indels 1; Gaps 1;
2 YTNKILILYFNKLYKKIKNSILDMRYENKFDISGYGNSINGDVYIYSTRNQFG 61
856 YVDNQRLLSTFTEYIKNIINTSILNLYESNHLIDLSRYAKINIGSKVNFDPIDKQIQ 915
62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNEYTIIDICRNNNSG 121
916 LFNLESSKIEVLKNAIVNYSMYENFSTFWIRIPKYFNKVLNNEYTIINCENNSGW 974
122 KISLNNKIIITWLODTAGNNQKL 144
975 KVSILNYGEIITWLODTQEIQRV 997

RESULT 10
A48940
bontoxilysin (EC 3.4.24.69) B precursor - Clostridium botulinum
N;Alternate names: botulinum neurotoxin type B (BoNT/B)
C;Species: Clostridium botulinum
C;Date: 19-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 09-Jul-2004
C;Accession: A48940; S21575; A42871; S07155; S08562; S07128; S08573; S08574
R;Whelan, S.M.; Elmore, M.J.; Bodsworth, N.J.; Brehm, J.K.; Atkinson, T.; Minton, N.P.
Appl. Environ. Microbiol. 58, 2345-2354, 1992
A;Title: Molecular cloning of the Clostridium botulinum structural gene encoding the ty
A;Reference number: A48940; MUID:92384550; PMID:1514783
A;Accession: A48940
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1291 <WHE>
A;Cross-references: UNIPROT:P10844; UNIPARC:UPI000016EA76; GB:M81186; NID:g144734; PIDN
A;Experimental source: type B, Danish
A;Note: sequence extracted from NCBI backbone (NCBIN:112080, NCBIP:112081); this public
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific i
A;Reference number: S48103; MUID:94013372; PMID:8408542
A;Accession: S48103
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 634-994 <CAM>
A;Cross-references: UNIPARC:UPI000016EA7A; EMBL:X70817; NID:g407782; PIDN:CAA50148.1; P
R;Szabo, E.A.; Pemberton, J.M.; Desmarchelier, P.M.
submitted to the EMBL Data Library, April 1992
A;Description: Partial amino acid sequence of botulinum neurotoxin type B and comparisi
A;Reference number: S21575
A;Accession: S21575
A;Molecule type: DNA
A;Residues: 36-217, 'G', 219-224, 'S', 226-246 <SZA>
A;Cross-references: UNIPARC:UPI000016EA79; EMBL:Z11934; NID:g40383; PIDN:CAA77991.1; PI
R;Kurazono, H.; Mochida, S.; Binz, T.; Eisel, U.; Quanz, M.; Grebenstein, O.; Wernars, J.
J. Biol. Chem. 267, 14721-14729, 1992

A;Title: Minimal essential domains specifying toxicity of the light chains of tetanus toxin
A;Reference number: A42871; MUID:92340509; PMID:1634516
A;Accession: A42871
A;Status: nucleic acid sequence not shown
A;Molecule type: mRNA
A;Residues: 1-313, 'S', 315-451 <KUR>
A;Cross-references: UNIPARC:UPI0000083742
A;Experimental source: strain Okra
A;Note: sequence extracted from NCBI backbone (NCBIP:109365)
R;DasGupta, B.R.; Datta, A.
Biochimie 70, 811-817, 1988
A;Title: Botulinum neurotoxin type B (strain 657): partial sequence and similarity with
A;Reference number: S07155; MUID:89000987; PMID:3139097
A;Accession: S07155
A;Molecule type: protein
A;Residues: 2-29, 'M', 31-45 <DAS>
A;Cross-references: UNIPARC:UPI0000173650
A;Accession: S08562
A;Molecule type: protein
A;Residues: 442-463, 'R', 465-467 <DA2>
A;Cross-references: UNIPARC:UPI0000173650
R;Schmidt, J.J.; Sathyanarayanan, V.; DasGupta, B.R.
Arch. Biochem. Biophys. 238, 544-548, 1985
A;Title: Partial amino acid sequences of botulinum neurotoxins types B and E.
A;Reference number: S07128; MUID:85197963; PMID:3888113
A;Accession: S07128
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-16 <SCH1>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08573
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-17 <SCH2>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08574
A;Status: preliminary
A;Molecule type: protein
A;Residues: 442-459 <SCH3>
A;Cross-references: UNIPARC:UPI0000173652
R;Schiavo, G.; Benfenati, F.; Poulain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A;Reference number: S27125; MUID:93063293; PMID:1331807
A;Contents: annotation
A;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synapses
C;Genetics:
A;Gene: bont/b
A;Function: catalyzes hydrolysis of a Gln-Phe peptide bond in synaptobrevin 2
C;Superfamily: tetanus toxin
C;Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc
F;2-441/Product: bontoxilysin B light chain #status experimental <LIGHT>
F;442-1291/Product: bontoxilysin B heavy chain #status experimental <HVV>
F;230,234/Binding site: zinc (His) #status predicted
F;231/Active site: Glu #status predicted
Query Match 46.1%; Score 355; DB 1; Length 1291;
Best Local Similarity 47.3%; Pred. No. 1.7e-20;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;
Qy 2 YTNDKILLYFNKLYKKIKDMSILDMRYENKFPIDISGYGNSINGDVYIYSTRNQF 61
Db 843 YTNDTILYEMFNKYNSEILNLIILRYRDNLDLSGYGAKVEYDGVGL--NDKNQF 900
Qy 62 IYSSKPESEVNTAQNNDIYNGRYQNFISFWIRIPKYN---KVNLNNEYTIIDICRNN 118
Db 901 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNNDIQNIYHNEYTIINCCK--NN 959
Qy 119 SGWKISLVNKKIWTLODTAGNNQKL 144
Db 960 SGWKISIRGNRIIWTLDINGKTKSV 985

RESULT 11

I40631

non-proteolytic botulinum neurotoxin type B precursor - Clostridium botulinum

C;Species: Clostridium botulinum

C;Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004

C;Accession: I40631; S48103; S48104; S36015

R;Hutson, R.A.; Collins, M.D.; East, A.K.; Thompson, D.E.

Curr. Microbiol. 28, 101-110, 1994

A;Title: Nucleotide sequence of the gene coding for non-proteolytic Clostridium botulinum

A;Reference number: I40631; MUID:94122659; PMID:7764370

A;Accession: I40631

A;Status: preliminary; translated from GB/EMBL/DBJ

A;Molecule type: DNA

A;Residues: 1-1291 <RES>

A;Cross-references: UNIPROT:Q08077; UNIPARC:UPI00000BDC86; EMBL:X71343; NID:9296148; PID:

R;Campbell, K.D.; Collins, M.D.; East, A.K.

J. Clin. Microbiol. 31, 2255-2262, 1993

A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific id

A;Reference number: S48103; MUID:94013372; PMID:8408542

A;Accession: S48103

A;Status: preliminary; nucleic acid sequence not shown; translation not shown

A;Molecule type: DNA

A;Residues: 634-761, 'E', 763-841, 'M', 843, 'T', 845, 'N', 847-994 <CAM1>

A;Cross-references: UNIPARC:UPI00000BEAEF; EMBL:X70814; NID:940778; PIDN:CAAS0145.1; PI:

A;Experimental source: non-proteolytic strain 2129B (Scott)

A;Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993

A;Accession: S48104

A;Status: preliminary

A;Molecule type: DNA

A;Residues: 634-843, 'T', 845, 'N', 847-994 <CAM2>

A;Cross-references: UNIPARC:UPI00000B7A6B; EMBL:X70819; NID:940778; PIDN:CAAS0150.1; PI:

A;Experimental source: non-proteolytic strain Eklund 2B (Colworth 229)

A;Comment: Botulinum neurotoxin type B in these strains may possess a capable catalytic s

C;Genetics:

A;Gene: bont/b

C;Superfamily: tetanus toxin

C;Keywords: metalloprotein; neurotoxin; transmembrane protein; zinc

F;2-441/Product: botulinum neurotoxin type B light chain #status predicted <LIGHT>

F;442-1291/Product: botulinum neurotoxin type B heavy chain #status predicted <HVV>

F;230,234/Binding site: zinc (His) #status predicted

F;231/Active site: Glu #status predicted

Query Match 45.2%; Score 348; DB 2; Length 1291;

Best Local Similarity 45.6%; Pred. No. 6.2e-20;

Matches 67; Conservative 35; Mismatches 39; Indels 6; Gaps 3;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKFPIDISGYGNSINGDVYIYSTRNQF 60

Db 842 TYSNIEILIKIFNKYNSEILNLIILRYRDNLDLSGYGAKVEYDGVGL--NDKNQF 899

Qy 61 GIYSSKPESEVNTAQNNDIYNGRYQNFISFWIRIPKYN---KVNLNNEYTIIDICRNN 117

Db 900 KLTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNNDIQNIYHNEYTIINCCK--N 958

Qy 118 NSGKISLVNKKIWTLODTAGNNQKL 144

Db 959 NSGKISIRGNRIIWTLDINGKTKSV 985

RESULT 12

S39791

neurotoxin - Clostridium botulinum

C;Species: Clostridium botulinum

C;Date: 07-Oct-1994 #sequence_revision 01-Dec-1995 #text_change 16-Jul-1999

A;Accession: S39791

R;Campbell, K.; Collins, M.D.; East, A.K.

Biochim. Biophys. Acta 1216, 487-491, 1993

A;Title: Nucleotide sequence of the gene coding for Clostridium botulinum (Clostridium s

A;Reference number: S39791; MUID:94092745; PMID:8268233

A;Accession: S39791

A;Status: preliminary

A;Molecule type: DNA

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AC Q57236; Q45863;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-FEB-2005 (TrEMBLrel. 29, Last annotation update)
DE BONT/F (Neurotoxin type F).
GN Name=bont/f; Synonyms=bont/F;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RN NUCLEOTIDE SEQUENCE.
RC STRAIN=NCTC 10281;
RA Hutson R.A., Collins M.D.; to the EMBL/GenBank/DBJ databases.
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
[2]
RN NUCLEOTIDE SEQUENCE.
RC Elmore M.J., Bodsworth N.J., Whelan S.M., Minton N.P.;
RA Submitted (AUG-1994) to the EMBL/GenBank/DBJ databases.
RL EMBL; X81714; CAA57358.1; -; Genomic DNA.
DR EMBL; L35496; AAA23210.1; -; Genomic DNA.
DR PIR; S48110; S48110.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOLYLISIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
KW Neurotoxin.
SQ SEQUENCE 1278 AA; 147073 MW; A1BE1318431D6918 CRC64;
Query Match 100.0%; Score 770; DB 2; Length 1278;
Best Local Similarity 100.0%; Pred. No. 1.8e-54;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILLYFNKLYKKIKDNLDRYENKFKIDISGYGNSISGVGVVYVYTNQNF 60
DB 848 SYTNDKILLYFNKLYKKIKDNLDRYENKFKIDISGYGNSISGVGVVYVYTNQNF 907
QY 61 GYSSKPSSEVNIQNNDIYNGRYQNFISFWVRIPKYPKVKVNLNNEYTIIDCIRNNSG 120
DB 908 GYSSKPSSEVNIQNNDIYNGRYQNFISFWVRIPKYPKVKVNLNNEYTIIDCIRNNSG 967
QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
DB 968 WKISLNYNKIIWTLODTAGNNQKL 991
RESULT 3
BXF_CLOBO STANDARD; PRT; 1274 AA.
AC P30996;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type F precursor (EC 3.4.24.69) (BONT/F)
DE (Bottoxilysin F) [Contains: Botulinum neurotoxin F light chain;
DE Botulinum neurotoxin F heavy chain].
GN Name=botF;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RN NUCLEOTIDE SEQUENCE.
RC STRAIN=Type F / ATCC 23387;
RX MEDLINE=93012902; PubMed=1398040; DOI=10.1016/0378-1097(92)90408-G;
RA East A.K., Richardson P.T., Allaway D., Collins M.D., Roberts T.A.,
Thompson D.E.;
RT "Sequence of the gene encoding type F neurotoxin of Clostridium
RL botulinum.";
RL FEMS Microbiol. Lett. 75:225-230(1992).
[2]
RN NUCLEOTIDE SEQUENCE OF 1-64.
RC STRAIN=Type F / Hobbs FT10;
RX MEDLINE=94297488; PubMed=7764998;
RA East A.K., Collins M.D.;
RT "Conserved structure of genes encoding components of botulinum
RL neurotoxin complex M and the sequence of the gene coding for the
RT nontoxic component in nonproteolytic Clostridium botulinum type F.";
RL Curr. Microbiol. 29:69-77(1994).
[3]
RN NUCLEOTIDE SEQUENCE OF 634-1002.
RC MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D., Collins M.D., East A.K.;
RT "Gene probes for identification of the botulinum neurotoxin gene and
RL specific identification of neurotoxin types B, E, and F.";
RL J. Clin. Microbiol. 31:2255-2262(1993).
[4]
RN IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94230352; PubMed=8175689;
RA Yamasaki S., Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
Roques B., Fyke E.M., Suedhof T.C., Jahn R., Niemann H.;
RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
RL botulinum neurotoxins and tetanus toxin.";
RL J. Biol. Chem. 269:12764-12772(1994).
CC -1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase that catalyzes the hydrolysis of the 58-Gln-Lys-59
CC bond of synaptobrevins-1 and -2.
CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -1- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -1- SIMILARITY: Belongs to the peptidase M27 family.
-----
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
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DR EMBL; M92906; AAA23263.1; -; Genomic DNA.
DR EMBL; S73676; AAC60475.1; -; Genomic DNA.
DR EMBL; X70820; CAA50151.1; -; Genomic DNA.
DR EMBL; X70816; CAA50147.1; -; Genomic DNA.
DR PIR; I40813; I40813.
DR PIR; S48109; S48109.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin recpt bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PR00760; BONTOLYLISIN.

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DR ProDom: PD001963; Botulinum: 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Hydrolyase; Metal-binding; Metalloprotease; Neurotoxin; Protease;
FT CHAIN 1 436 Botulinum neurotoxin F light chain.
FT CHAIN 437 1274 Botulinum neurotoxin F heavy chain.
FT ACT_SITE 228 227 By similarity.
FT METAL 231 231 Zinc (catalytic) (By similarity).
FT METAL 231 231 Zinc (catalytic) (By similarity).
FT DISULFID 429 445 Interchain (between light and heavy
FT SEQUENCE 1274 AA; 146710 MW; 5B99756A7438B921 CRC64;

Query Match 81.4%; Score 626.5; DB 1; Length 1274;
Best Local Similarity 80.3%; Pred. No. 1.1e-42;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 847 SYTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 906

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 907 GIYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 966

Qy 121 WKISLNYNKK---IITWLODTAGNNQKL 144
Db 967 WKISLRTVRCDEIITWLODTSGNKENL 993

RESULT 4
Q9ZAJ5 CLOBO
ID Q9ZAJ5 CLOBO PRELIMINARY; PRT; 1280 AA.
AC Q9ZAJ5;
DT 01-MAY-1999 (TrEMBLrel. 10, Created)
DT 01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Bont protein.
GN Name=bont;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RX MEDLINE=98440323; PubMed=9767710; DOI=10.1007/s002849900384;
RA Santos-Buelga J., Collins M.D., East A.K.;
RT "Characterization of the genes encoding the Botulinum neurotoxin
RT complex in a strain of clostridium botulinum producing type B & F
RT neurotoxins.";
RL Curt. Microbiol. 37:312-318 (1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RA Santos-Buelga J.A.;
RL Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; Y13631; CAA73972.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27_002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR001591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1280 AA; 147486 MW; D0F748976EBC222C CRC64;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 847 SYTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 906

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 907 GIYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 966

Qy 121 WKISLNYNKK---IITWLODTAGNNQKL 144
Db 967 WKISLRTVRCDEIITWLODTSGNKENL 993

Query Match 81.4%; Score 626.5; DB 1; Length 1274;
Best Local Similarity 80.3%; Pred. No. 1.1e-42;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 848 SYTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 907

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 908 GIYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 967

Qy 121 WKISLNYNKK---IITWLODTAGNNQKL 144
Db 968 WKISLRTVRCDEIITWLODTSGNKENL 994

RESULT 5
Q45851_9CLOT
ID Q45851_9CLOT PRELIMINARY; PRT; 1268 AA.
AC Q45851;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Neurotoxin type F.
GN Name=bont /f;
OS Clostridium baratii.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1561;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=93252228; PubMed=8486245; DOI=10.1016/0378-1097(93)90581-L;
RA Thompson D.E., Hutson R.A., East A.K., Allaway D., Collins M.D.,
RA Richardson P.T.;
RT "Nucleotide sequence of the gene coding for Clostridium baratii type F
RT neurotoxin: comparison with other clostridial neurotoxins.";
RL FEMS Microbiol. Lett. 108:175-182 (1993).
DR EMBL; X68262; CAA48329.1; -; Genomic_DNA.
DR PIR; S33411; S33411.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27_002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR001591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase M27.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR Neurotoxin.
KW Neurotoxin.
SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15BD2 CRC64;

Query Match 81.2%; Score 625; DB 2; Length 1268;
Best Local Similarity 81.1%; Pred. No. 1.4e-42;
Matches 116; Conservative 11; Mismatches 16; Indels 0; Gaps 0;

Qy 2 YTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 61
Db 840 YTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 899

Qy 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 121
Db 900 IYSSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 959

Qy 122 KISLNYNKKIITWLODTAGNNQKL 144
Db 960 KISLNYNKKIITWLODTAGNNQKL 982
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DR ProDom: PD001963; Botulinum: 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Hydrolyase; Metal-binding; Metalloprotease; Neurotoxin; Protease;
FT CHAIN 1 436 Botulinum neurotoxin F light chain.
FT CHAIN 437 1274 Botulinum neurotoxin F heavy chain.
FT ACT_SITE 228 227 By similarity.
FT METAL 231 231 Zinc (catalytic) (By similarity).
FT METAL 231 231 Zinc (catalytic) (By similarity).
FT DISULFID 429 445 Interchain (between light and heavy
FT SEQUENCE 1274 AA; 146710 MW; 5B99756A7438B921 CRC64;

Query Match 81.4%; Score 626.5; DB 1; Length 1274;
Best Local Similarity 80.3%; Pred. No. 1.1e-42;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 847 SYTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 906

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 907 GIYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 966

Qy 121 WKISLNYNKK---IITWLODTAGNNQKL 144
Db 967 WKISLRTVRCDEIITWLODTSGNKENL 993

RESULT 4
Q9ZAJ5 CLOBO
ID Q9ZAJ5 CLOBO PRELIMINARY; PRT; 1280 AA.
AC Q9ZAJ5;
DT 01-MAY-1999 (TrEMBLrel. 10, Created)
DT 01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Bont protein.
GN Name=bont;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RX MEDLINE=98440323; PubMed=9767710; DOI=10.1007/s002849900384;
RA Santos-Buelga J., Collins M.D., East A.K.;
RT "Characterization of the genes encoding the Botulinum neurotoxin
RT complex in a strain of clostridium botulinum producing type B & F
RT neurotoxins.";
RL Curt. Microbiol. 37:312-318 (1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RA Santos-Buelga J.A.;
RL Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; Y13631; CAA73972.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27_002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR001591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase M27.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1280 AA; 147486 MW; D0F748976EBC222C CRC64;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 847 SYTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 906

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 907 GIYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 966

Qy 121 WKISLNYNKK---IITWLODTAGNNQKL 144
Db 967 WKISLRTVRCDEIITWLODTSGNKENL 993

Query Match 81.4%; Score 626.5; DB 1; Length 1274;
Best Local Similarity 80.3%; Pred. No. 1.1e-42;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 848 SYTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 907

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 908 GIYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 967

Qy 121 WKISLNYNKK---IITWLODTAGNNQKL 144
Db 968 WKISLRTVRCDEIITWLODTSGNKENL 994

RESULT 5
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AC Q45851;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Neurotoxin type F.
GN Name=bont /f;
OS Clostridium baratii.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1561;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=93252228; PubMed=8486245; DOI=10.1016/0378-1097(93)90581-L;
RA Thompson D.E., Hutson R.A., East A.K., Allaway D., Collins M.D.,
RA Richardson P.T.;
RT "Nucleotide sequence of the gene coding for Clostridium baratii type F
RT neurotoxin: comparison with other clostridial neurotoxins.";
RL FEMS Microbiol. Lett. 108:175-182 (1993).
DR EMBL; X68262; CAA48329.1; -; Genomic_DNA.
DR PIR; S33411; S33411.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27_002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR001591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase M27.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR Neurotoxin.
KW Neurotoxin.
SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15BD2 CRC64;

Query Match 81.2%; Score 625; DB 2; Length 1268;
Best Local Similarity 81.1%; Pred. No. 1.4e-42;
Matches 116; Conservative 11; Mismatches 16; Indels 0; Gaps 0;

Qy 2 YTNDKILLYFNKLYKKIKDMSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 61
Db 840 YTNDKILLYFNRLYKIKDSSILDYRNNKFKIDISGYGNSISINGDVYIYSTNRNQF 899

Qy 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 121
Db 900 IYSSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 959

Qy 122 KISLNYNKKIITWLODTAGNNQKL 144
Db 960 KISLNYNKKIITWLODTAGNNQKL 982
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RESULT 6
Q45861_CLOBO
ID Q45861_CLOBO PRELIMINARY; PRT; 367 AA.
AC Q45861;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE Botulinum neurotoxin type E (Fragment).
GN Name=BoNT/E;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN-type E;
RX MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D., Collins M.D., East A.K.;
RT "Gene probes for identification of the botulin neurotoxin gene and
RT specific identification of neurotoxin types B, E, and F.";
RL J. Clin. Microbiol. 31:2255-2262(1993).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN-type E;
RA Campbell K.D.;
RL Submitted (JAN-1993) to the EMBL/GenBank/DBJ databases.
DR EMBL; X70818; CAA50149.1; -; Genomic_DNA.
DR PIR; S48106; S48106.
DR HSP; P10844; IFS1.
DR GO; GO:0009405; P:pathogenesis; IEA.
KW Neurotoxin.
FT NON_TER 1
FT NON_TER 367
FT NON_TER 367
SQ SEQUENCE 367 AA; 42902 MW; 346A610C2FF70262 CRC64;

Query Match 74.2%; Score 571.5; DB 2; Length 367;
Best Local Similarity 71.7%; Pred. No. 9e-39;
Matches 104; Conservative 25; Mismatches 15; Indels 1; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKFDISGYGSNLSINGDVYIYSTNRNQF 60
Db 214 SYTDDKILISYFNKFFKRIKSSVLLNRYKNDKYDVTSGYDSNININGDVYKPTNKNQF 273

Qy 61 GIYSKSPSEVNIQNNDIYNGRYQNFSSIFSWRIPKYNK-VNLNNEYTIIDCIRNNS 119
Db 274 GIYNDKLSVNIQNNDIYNDKYNFSSIFSWRIPNVDKYNVNVNNEYTIIDCIRNNS 333

Qy 120 GWKISLNYNKKIITLQDTAGNNOKL 144
Db 334 GWKVSLLNHNELIITLQDNAGINQKL 358

RESULT 7
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ID Q54A79_CLOBO PRELIMINARY; PRT; 1252 AA.
AC Q54A79;
DT 13-SEP-2005 (TrEMBLrel. 31, Created)
DT 13-SEP-2005 (TrEMBLrel. 31, Last sequence update)
DT 13-SEP-2005 (TrEMBLrel. 31, Last annotation update)
DE Botulinum neurotoxin type E.
GN Name=BoNT/E;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=35396;
RA Tsukamoto K., Mukanoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RA Nakamura S., Karasawa T., Kozaki S.;
RT "Sequence of the botulinum neurotoxin type E.";
RT Submitted (MAR-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB082519; BAB86845.1; -; Genomic_DNA.

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KW Neurotoxin.
SQ SEQUENCE 1252 AA; 143637 MW; 76401D4D2E95D7A2 CRC64;

Query Match 74.2%; Score 571.5; DB 2; Length 1252;
Best Local Similarity 71.7%; Pred. No. 3.3e-38;
Matches 104; Conservative 25; Mismatches 15; Indels 1; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKFDISGYGSNLSINGDVYIYSTNRNQF 60
Db 829 SYTDDKILISYFNKFFKRIKSSVLLNRYKNDKYDVTSGYDSNININGDVYKPTNKNQF 888

Qy 61 GIYSKSPSEVNIQNNDIYNGRYQNFSSIFSWRIPKYNK-VNLNNEYTIIDCIRNNS 119
Db 889 GIYNDKLSVNIQNNDIYNDKYNFSSIFSWRIPNVDKYNVNVNNEYTIIDCIRNNS 948

Qy 120 GWKISLNYNKKIITLQDTAGNNOKL 144
Db 949 GWKVSLLNHNELIITLQDNAGINQKL 973

RESULT 8
BXE_CLOBO
ID BXE_CLOBO STANDARD; PRT; 1250 AA.
AC P30995;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BoNT/E)
DE (Bontoxilysin E) [Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain].
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=ATCC 43181; and ATCC 43755;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulin neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RC STRAIN=BL6340;
RX MEDLINE=91237316; PubMed=2033376;
RA Fujii N., Kimura K., Murakami T., Indoh T., Tsuzuki K., Yokosawa N.,
RA Yashiki T., Oguma K.;
RT "Cloning of a DNA fragment encoding the 5'-terminus of the botulinum
RT type E toxin gene from Clostridium butyricum strain BL6340.";
RL J. Gen. Microbiol. 137:519-525(1991).
RN [3]
RP PROTEIN SEQUENCE OF 1-48.
RC STRAIN=5262;
RA Gimenez J., Foley J., Dasgupta B.R.;
RT "Neurotoxin type E from Clostridium botulinum and C. butyricum;
RT partial sequence and comparison.";
RL FASEB J. 2:A1750-A1750(1988).
CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.

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RC	STRAIN=BL 5262;
RA	Taukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RB	Nakamura S., Karaasawa T., Kozaki S.;
RL	Submitted (JUL-2002) to the EMBL/GenBank/DBJ databases.
RM	EMBL; AB088207; BAC05434.1; -; Genomic_DNA.
DR	HSSP; Q45894; 1E1H.
DR	SMR; Q8KMZ3; 2-412.
DR	GO; GO:0016021; C:integral to membrane; IEA.
DR	GO; GO:0008237; F:metallopeptidase activity; IEA.
DR	GO; GO:0009405; P:pathogenesis; IEA.
DR	GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR	InterPro; IPR011591; Botulinum.
DR	InterPro; IPR000395; Peptidase M27.
DR	InterPro; IPR006025; Pept_M_Zn_BS.
DR	Pfam; PF01742; Peptidase_M27; 1.
DR	PRINTS; PR00760; BONTOKILYSIN.
DR	PRODOM; PD001963; Botulinum; 1.
DR	PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
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Query Match	73.8%; Score 568.5; DB 2; Length 1252;
Best Local Similarity	71.0%; Pred.No. 5.9e-38;
Matches 103; Conservative 26; Mismatches 15; Indels 1; Gaps 1	
QY	1 SYTNDKTLIIYENKLYKKIKDNSTLDMYENNKFDISGYGSNISNGDVVIYSTNRNQF 60
DB	829 SYTDDKTLIISYFNKFKRIKSSSVLNRYKNDKVDTSGVDSNININGDVKYPTKNQF 888
QY	61 GIYSSKPEVNIAQNDDIYNRGYQNFISIFPWRIPKYFNK-VNLNNEYTTIIDCIRNNNS 119
DB	889 GIYDKLSEVNISQNDYIIVDNKYKFNFSIFPWVRIPNYDNKI VNVNNEYTTIINCWRDNN 948
QY	120 GWKISLNYNKIITWLTQDTAGNNKL 144
DB	949 GWKVSLSHNELIWTLODMSGINQKL 973
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AC	Q9FAR6;
DT	01-MAR-2001 (TrEMBLrel. 16, Created)
DT	01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
DT	01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE	Type E botulinum toxin.
GN	Name=bot/E;
OS	Clostridium butyricum.
OC	Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
CC	Clostridium.
OX	NCBI_TaxID=1492;
RX	[1]
RP	NUCLEOTIDE SEQUENCE.
RC	STRAIN=BL 6340/ATCC 43755/BL 5520/KZ 147;
RC	MEDLINE=200509829; PubMed=11055954;
RR	DOI=10.1128/AEM.66.11.4992-4997.2000;
RA	Wang X., Maegawa T., Karaasawa T., Kozaki S., Taukamoto K., Gyobu Y.,
RA	Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RT	"Genetic analysis of type E botulinum toxin-producing Clostridium
RT	butyricum strains.";
RL	Appl. Environ. Microbiol. 66:4992-4997(2000).
RL	EMBL; AB039264; BAB12249.1; -; Genomic_DNA.
DR	HSSP; Q45894; 1E1H.
DR	SMR; Q9FAR6; 5-415.
DR	GO; GO:0016021; C:integral to membrane; IEA.
DR	GO; GO:0008237; F:metallopeptidase activity; IEA.
DR	GO; GO:0009405; P:pathogenesis; IEA.
DR	GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR	InterPro; IPR011591; Botulinum.
DR	InterPro; IPR000395; Peptidase M27.
DR	InterPro; IPR006025; Pept_M_Zn_BS.
DR	Pfam; PF01742; Peptidase_M27; 1.
DR	PRINTS; PR00760; BONTOKILYSIN.
DR	PRODOM; PD001963; Botulinum; 1.

RX MEDLINE=89350959; PubMed=2669749;
RA Betley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of
RL the N-terminal encoding region.";
RN Biochem. Biophys. Res. Commun. 162:1388-1395(1989).
[5]
RN NUCLEOTIDE SEQUENCE OF 1-18.
RP STRAIN=Type A / NIH;
RC MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RX Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RA "Molecular characterization of two forms of nontoxic-nonhemagglutinin
RT components of Clostridium botulinum type A progenitor toxins.";
RL FEBS Lett. 376:41-44(1995).
[6]
RN PROTEIN SEQUENCE OF 1-16.
RP MEDLINE=84178501; PubMed=6370252;
RX Schmidt J.J., Sartymoorthy V., Dasgupta B.R.;
RA "Partial amino acid sequence of the heavy and light chains of
RT botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 119:900-904(1984).
[7]
RN PROTEIN SEQUENCE OF 1-46.
RP Dasgupta B.R., Foley J., Niece R.;
RA "Partial sequence of the light chain of botulinum neurotoxin type A.";
RL Biochemistry 26:4162-4162(1987).
[8]
RN PROTEIN SEQUENCE OF 1-5 AND 444-456.
RP MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RX Dasgupta B.R., Dekleva M.L.;
RA "Botulinum neurotoxin type A: sequence of amino acids at the N-
RT terminus and around the nicking site.";
RL Biochimie 72:661-664(1990).
[9]
RN PROTEIN SEQUENCE OF 448-474 AND 872-895.
RP MEDLINE=89024662; PubMed=3178218;
RX Sathymoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RA "Botulinum neurotoxin type A: cleavage of the heavy chain into two
RT halves and their partial sequences.";
RL Arch. Biochem. Biophys. 266:142-151(1988).
[10]
RN PROTEIN SEQUENCE OF 448-482.
RP MEDLINE=85285016; PubMed=3896784;
RX Shone C.C., Hambleton P., Melling J.;
RA "Inactivation of Clostridium botulinum type A neurotoxin by trypsin
RT and purification of two tryptic fragments. Proteolytic action near the
COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RL Eur. J. Biochem. 151:75-82(1985).
[11]
RN PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
RP PubMed=8397793;
RX Gimenez J.A., Dasgupta B.R.;
RA "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72,
RT 45, 42, and 18 kD fragments.";
RL J. Protein Chem. 12:351-363(1993).
[12]
RN IDENTIFICATION OF SUBSTRATE.
RP MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
RX Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
RA Benfenati F., Wilson M.C., Montecucco C.;
RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
RL COOH-terminal peptide bonds.";
RN FEBS Lett. 335:99-103(1993).
[13]
RN IDENTIFICATION OF SUBSTRATE.
RP MEDLINE=94124495; PubMed=8294407;
RX Binz T., Blasi J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
RA Jahn R., Niemann H.;
RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
RL J. Biol. Chem. 269:1617-1620(1994).
[14]
RN MUTAGENESIS OF GLU-261, PHE-265 AND TYR-365.
RP MEDLINE=2156941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
RX Rigoni M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;

RT "site-directed mutagenesis identifies active-site residues of the
RT light chain of botulinum neurotoxin type A.";
RN Biochem. Biophys. Res. Commun. 288:1231-1237(2001).
[15]
RN X-RAY CRYSTALLOGRAPHY (3.3 ANGSTROMS).
RP MEDLINE=98455071; PubMed=9783750;
RX Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
RA "Crystal structure of botulinum neurotoxin type A and implications for
RT toxicity.";
RL Nat. Struct. Biol. 5:898-902(1998).
CC -1- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure.
CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -1- COFACTOR: Binds 1 zinc ion per subunit.
CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H).
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the
CC treatment of strabismus and blepharospasm associated with dystonia
CC and cervical dystonia. Also used for the treatment of hemifacial
CC spasm and a number of other neurological disorders characterized
CC by abnormal muscle contraction.
CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -1- SIMILARITY: Belongs to the peptidase M27 family.
CC -1- DATABASE: NAME=BOTOX product information Web site;
CC WWW="http://www.botox.com/site/";
CC -1- DATABASE: NAME=Protein Spotlight; NOTE=Issue 19 of February 2002;
CC WWW="http://www.expasy.org/spotlight/backissues/sptl019.shtml".

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CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
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CC use as long as its content is in no way modified and this statement is not
CC removed.

DR EMBL; X52066; CAA36289.1; -; Genomic DNA.
DR EMBL; M30196; AAA23262.1; -; Genomic DNA.
DR EMBL; X92973; CAA63551.1; -; Genomic DNA.
DR EMBL; D67030; BAA11051.1; -; Genomic DNA.
DR EMBL; M27892; AAA23269.1; -; Genomic DNA.
DR PIR; A35294; BTCLAB.
DR PDB; 3BTA; X-ray; A=1-1295.
DR MEROPS; M27.002; -.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR012928; Toxin_recept_bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase_M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PR00760; BONTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
KW Metalloprotease; Neurotoxin; Pharmaceutical; Protease; Toxin;
KW Transmembrane; Zinc. 0
FT INIT_MET 0
FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
FT TRANSMEM 626 646 Potential.

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FT TRANSMEM 655 675 Potential.
FT ACT SITE 223 223 Zinc (catalytic).
FT METAL 222 222 Zinc (catalytic).
FT METAL 226 226 Zinc (catalytic).
FT METAL 261 261 Interchain (between light and heavy
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FT DISULFID 1234 1279
FT VARIANT 26 26 V -> A.
FT MUTAGEN 261 261 E->A: Drastic decrease in enzymatic
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Qy 2 YTNCKILLYFNKLYKKIKNSILDMRYENKFKFIDISGYSNGISNGDVYIYSTNRNQFG 61
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Qy 62 IYSSKPSVNIQAQNDIYNGRYQNFISFWIRIPKYNKVLNNEYTIIDCIRNNSGW 121
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Qy 122 KISLNYNKIIWTLODTAGNNQKL 144
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DT 10-MAY-2005 (TRENBLrel. 30, Created)
DT 10-MAY-2005 (TRENBLrel. 30, Last sequence update)
DE BoNT/A (Neurotoxin BoNT).
GN Name=boNT/a;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
ON NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX STRAIN=Hall A-hyper;
RX MEDLINE=22617869; PubMed=12732962; DOI=10.1007/s00284-002-3851-1;
RA Dineen S.S., Bradshaw M., Johnson E.A.;
RT "Neurotoxin gene clusters in Clostridium botulinum type A strains:
RT sequence comparison and evolutionary implications.";
RL Curr. Microbiol. 46:345-352(2003).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Allergan-Hall A;
RC MEDLINE=22919384; PubMed=14557061; DOI=10.1016/S0378-1119(03)00792-3;
RA Zhang L., Lin W.J., Li S., Aoki K.R.;
RT "Complete DNA sequences of the botulinum neurotoxin complex of
RT Clostridium botulinum type A-Hall (Allergan) strain.";
RL Gene 315:21-32(2003).
DR EMBL; AF461540; AAM75961.1; -; Genomic_DNA.
DR EMBL; AF468749; AAQ06331.1; -; Genomic_DNA.
KW Neurotoxin.
SQ SEQUENCE 1296 AA; 149425 MW; DEABCF2754AE43B6 CRC64;
Query Match 49.2%; Score 378.5; DB 2; Length 1296;
Best Local Similarity 48.3%; Pred. No. 2.3e-22;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;
Qy 2 YTNCKILLYFNKLYKKIKNSILDMRYENKFKFIDISGYSNGISNGDVYIYSTNRNQFG 61
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Qy 62 IYSSKPSVNIQAQNDIYNGRYQNFISFWIRIPKYNKVLNNEYTIIDCIRNNSGW 121
Db 915 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLNEYTIINCM-ENNSGW 974
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Qy 122 KISLNYNKIIWTLODTAGNNQKL 144
Db 975 KVSILNYGELIWTLODTQEIQRV 997
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AC Q45894; P77780;
DT 28-FEB-2003 (Rel. 41, Created)
DT 28-FEB-2003 (Rel. 41, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)
DE (Bontoxilysin A) (BOTOX) [Contains: Botulinum neurotoxin A light-
DE chain; Botulinum neurotoxin A heavy-chain].
GN Name=botA; Synonyms=atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
ON NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / Kyoto-F;
RC MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;
RA Willemse A., East A.K., Lawson P.A., Collins M.D.;
RT "Sequence of the gene coding for the neurotoxin of Clostridium
RT botulinum type A associated with infant botulism: comparison with
RT other clostridial neurotoxins.";
RL Res. Microbiol. 144:547-556(1993).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / Kyoto-F;
RC MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT components of the botulinum toxin complex in proteolytic Clostridium
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
CC -!- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the toxin to the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-|-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure (By similarity).
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H) (By similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC
CC EMBL; X73423; CAA51824.1; -; Genomic DNA.
CC EMBL; X87974; CAA61234.1; -; Genomic_DNA.
CC PIR; I40645; I40645.
CC PDB; 1E1H; X-ray; A/C=9-249, B/D=250-415.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
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 DR InterPro; IPR012928; Toxin_recpt_bd_N.
 DR InterPro; IPR012500; Toxin_trans.
 DR Pfam; PF01742; Peptidase_M27; 1.
 DR Pfam; PF07953; Toxin_R_bind_N; 1.
 DR Pfam; PF07952; Toxin_trans_1.
 DR PRINTS; PR00760; BONTOLILYSIN.
 DR PRODOM; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; FALSE_NEG.
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 KW Protease; Toxin; Transmembrane; Zinc.
 FT INIT_MET 0 0 By similarity.
 FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
 FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
 FT TRANSMEM 626 646 Potential.
 FT TRANSMEM 655 675 Potential.
 FT ACT_SITE 223 223 By similarity.
 FT METAL 222 222 Zinc (catalytic) (By similarity).
 FT METAL 226 226 Zinc (catalytic) (By similarity).
 FT DISULFID 429 453 Interchain (between light and heavy chains) (By similarity).
 FT DISULFID 1234 1279 By similarity.
 FT SEQUENCE 1295 AA; 149280 MW; 5DA04A13D98D6372 CRC64;

Query Match 49.0%; Score 377.5; DB 1; Length 1295;
 Best Local Similarity 49.0%; Pred. No. 2.8e-22;
 Matches 70; Conservative 29; Mismatches 43; Indels 1; Gaps 1;

Qy 2 YTNKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSINGDVYIYSTNRNQFG 61
 Db 855 YVDNKKLLSTFTEYIKIVNTSILSIYVKDDLDLSRYGAKINIGDRVYDSIDKQIK 914
 Qy 62 IYSSKPSEVNIAQNNDIYNGRYQNFISFVWRIPKYNKVNLANEYTIIDCIRNNNSGW 121
 Db 915 LINLESSTIEVLKNAIVNSMYENFSTSPWIKPKYFSKINLANEYTIINCI-ENNSGW 973
 Qy 122 KISLNYNKIITWLTQDTAGNQKL 144
 Db 974 KVSILNYGEIITWLTQDNKQNIQRV 996

Search completed: March 2, 2006, 00:46:24
 Job time : 74.8376 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:46:47 ; Search time 17.7077 Seconds
(without alignments)
672.325 Million cell updates/sec

Title: US-08-981-087B-2
Perfect score: 770
Sequence: 1 SYTNDKILLYFNKLYKKIK.....LNYNKIIWTLDQTAGNNQKL 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 572060 seqs, 82675679 residues

Total number of hits satisfying chosen parameters: 572060

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued Patents AA:*
1: /cgn2_6/ptodata/1/iaa/5 COMB.pep.*
2: /cgn2_6/ptodata/1/iaa/6 COMB.pep.*
3: /cgn2_6/ptodata/1/iaa/H_COMB.pep.*
4: /cgn2_6/ptodata/1/iaa/PCTUS_COMB.pep.*
5: /cgn2_6/ptodata/1/iaa/RE_COMB.pep.*
6: /cgn2_6/ptodata/1/iaa/backfiles1.pep.*

pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	378.5	49.2	1296	1 US-08-480-604A-28	Sequence 28, Appl
2	378.5	49.2	1296	1 US-08-405-496A-28	Sequence 28, Appl
3	378.5	49.2	1296	2 US-08-915-136-28	Sequence 28, Appl
4	378.5	49.2	1296	2 US-09-084-517-28	Sequence 28, Appl
5	377.5	49.0	848	2 US-10-360-101-219	Sequence 219, App
6	371.5	48.2	438	1 US-08-480-604A-23	Sequence 23, Appl
7	371.5	48.2	438	1 US-08-405-496A-23	Sequence 23, Appl
8	371.5	48.2	438	2 US-08-915-136-23	Sequence 23, Appl
9	371.5	48.2	438	2 US-09-084-517-23	Sequence 23, Appl
10	371.5	48.2	462	1 US-08-480-604A-26	Sequence 26, Appl
11	371.5	48.2	462	1 US-08-405-496A-26	Sequence 26, Appl
12	371.5	48.2	462	2 US-08-915-136-26	Sequence 26, Appl
13	371.5	48.2	462	2 US-09-084-517-26	Sequence 26, Appl
14	355	46.1	1169	2 US-09-255-829-20	Sequence 20, Appl
15	355	46.1	1290	2 US-10-360-101-220	Sequence 220, App
16	277.5	36.0	382	2 US-09-288-328A-9	Sequence 9, Appli
17	277.5	36.0	382	2 US-09-548-409B-9	Sequence 9, Appli
18	209	27.1	452	1 US-07-618-312A-2	Sequence 2, Appli
19	209	27.1	452	1 US-08-280-228-2	Sequence 2, Appli
20	206	26.8	452	1 US-07-618-312A-4	Sequence 4, Appli
21	206	26.8	452	1 US-08-280-228-4	Sequence 4, Appli
22	206	26.8	618	1 US-08-868-381A-5	Sequence 5, Appli
23	206	26.8	853	1 US-08-913-880C-17	Sequence 17, Appl
24	206	26.8	858	2 US-08-913-880C-16	Sequence 16, Appl
25	206	26.8	860	2 US-08-913-880C-15	Sequence 15, Appl
26	206	26.8	862	2 US-08-913-880C-14	Sequence 14, Appl
27	206	26.8	865	2 US-08-913-880C-13	Sequence 13, Appl

28	206	26.8	866	2 US-08-913-880C-12	Sequence 12, Appl
29	206	26.8	874	2 US-08-913-880C-11	Sequence 11, Appl
30	206	26.8	875	2 US-08-913-880C-10	Sequence 10, Appl
31	206	26.8	1315	2 US-08-913-880C-1	Sequence 1, Appli
32	191	24.8	452	1 US-08-110-786A-8	Sequence 8, Appli
33	100.5	13.1	464	1 US-08-553-619B-9	Sequence 9, Appli
34	96	12.5	2391	1 US-08-446-855A-2	Sequence 2, Appli
35	96	12.5	2391	2 US-09-150-741-2	Sequence 2, Appli
36	94	12.2	394	2 US-09-079-030-83	Sequence 83, Appl
37	94	12.2	840	2 US-09-079-030-214	Sequence 214, App
38	94	12.2	4536	2 US-09-180-422B-27	Sequence 27, Appl
39	94	12.2	4536	2 US-09-079-030-1	Sequence 1, Appli
40	94	12.2	4563	2 US-09-108-006C-1	Sequence 842, App
41	94	12.2	4563	2 US-09-538-092-842	Sequence 2993, Ap
42	92.5	12.0	912	2 US-09-134-001C-2993	Sequence 30, Appl
43	92.5	12.0	993	2 US-08-836-687B-30	Sequence 20, Appl
44	92	11.9	1381	2 US-09-662-254B-20	Sequence 12, Appl
45	91.5	11.9	467	2 US-08-495-484-12	

ALIGNMENTS

RESULT 1
US-08-480-604A-28
; Sequence 28, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027

```

; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-480-604A-28

Query Match          49.2%; Score 378.5; DB 1; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

QY 2 YTNDKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQFG 61
Db 856 YVDNQRLSLSTFTYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRIPKYFNKNVNLNNEYTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNYSMYENFSTFWIRIPKYFNYSISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNNKIITWLTQDTAGNNOKL 144
Db 975 KVSILNYGEIITWLTQDTQEIQRV 997

RESULT 2
US-08-405-496A-28
; Sequence 28, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; TITLE OF INVENTION: NEUROTOXIN
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338

; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-405-496A-28

Query Match          49.2%; Score 378.5; DB 1; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

QY 2 YTNDKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQFG 61
Db 856 YVDNQRLSLSTFTYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRIPKYFNKNVNLNNEYTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNYSMYENFSTFWIRIPKYFNYSISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNNKIITWLTQDTAGNNOKL 144
Db 975 KVSILNYGEIITWLTQDTQEIQRV 997

RESULT 3
US-08-915-136-28
; Sequence 28, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:

```

NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40, 027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-28

Query Match 49.2%; Score 378.5; DB 2; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;
QY 2 YTNKILILYFNKLYKKIKNSILDMRYENKFDIDISGYSNISINGDVVIYSTNRNQFG 61
Db 856 YVDNQRLSTFTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEVTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNMYENFSTFSWIRIPKYNFNSISLNNEVTIINCM-ENNNSGW 974
QY 122 KISLNYNKIIWTLODTAGNNQKL 144
Db 975 KVSILNYGEIITWLTQDTQEIQRV 997

RESULT 4

US-09-084-517-28
Sequence 28, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
OPERATING SYSTEM: PC-DOS/MS-DOS
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESS: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:

NAME: CARROLL, PETER G.
REGISTRATION NUMBER: 32,837
REFERENCE/DOCKET NUMBER: OPHD-01610
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-084-517-28

Query Match 49.2%; Score 378.5; DB 2; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;
QY 2 YTNKILILYFNKLYKKIKNSILDMRYENKFDIDISGYSNISINGDVVIYSTNRNQFG 61
Db 856 YVDNQRLSTFTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEVTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNMYENFSTFSWIRIPKYNFNSISLNNEVTIINCM-ENNNSGW 974
QY 122 KISLNYNKIIWTLODTAGNNQKL 144
Db 975 KVSILNYGEIITWLTQDTQEIQRV 997

RESULT 5

US-10-360-101-219
Sequence 219, Application US/10360101
Patent No. 8861236
GENERAL INFORMATION:
APPLICANT: Moll, Gert N.
APPLICANT: Leenhouts, Cornelis J.
TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
FILE REFERENCE: 2183-5673
CURRENT APPLICATION NUMBER: US/10/360,101
CURRENT FILING DATE: 2003-02-07
PRIOR APPLICATION NUMBER: EP 02077060.8
PRIOR FILING DATE: 2002-05-24
NUMBER OF SEQ ID NOS: 309
SOFTWARE: Patent in version 3.1
SEQ ID NO 219
LENGTH: 848
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: sequence A-heavy chain of clostridium botulinum toxin type A
US-10-360-101-219

Query Match 49.0%; Score 377.5; DB 2; Length 848;
Best Local Similarity 49.0%; Pred. No. 4.2e-31;
Matches 70; Conservative 29; Mismatches 43; Indels 1; Gaps 1;
QY 2 YTNKILILYFNKLYKKIKNSILDMRYENKFDIDISGYSNISINGDVVIYSTNRNQFG 61
Db 408 YVDNKKLLSTFTTEYIKNIINTSILNRYESNHLIDLSRYGAKINIGDRVYDSIDKQIK 467
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEVTIIDCIRNNNSGW 121
Db 468 LFNLESSKIEVLKNAIVNMYENFSTFSWIRIPKYNFNSISLNNEVTIINCM-ENNNSGW 526
QY 122 KISLNYNKIIWTLODTAGNNQKL 144
Db 527 KVSILNYGEIITWLTQDNKQIQRV 549

RESULT 6

US-08-480-604A-23

Sequence 23, Application US/08480604A
Patent No. 5736139
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/480.604A
FILING DATE: 07-JUN-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/422,711
FILING DATE: 14-APR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-480-604A-23

Query Match 48.2%; Score 371.5; DB 1; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILYFNKLYKKIKDINSILDMRYENKFFIDISGVGNSINISGDVYIYSTNRNQFIYSSKP 67
DB 4 LLSTFTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLFNLS 63
QY 68 SEVNIQANDDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSGWKISLNY 127
DB 64 SKIEVLKNAIVNSMYENFSTFWIRIPKYNFISLNNEYTIINCENNSGWKISLNY 122
QY 128 NKIITWLTQDTAGNNQKL 144

Db 123 GEIITWLTQDTQEIQRV 139
RESULT 7
US-08-405-496A-23
Sequence 23, Application US/08405496A
Patent No. 5919665
GENERAL INFORMATION:
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: USA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/405.496A
FILING DATE: 16-MAR-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-23

Query Match 48.2%; Score 371.5; DB 1; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILYFNKLYKKIKDINSILDMRYENKFFIDISGVGNSINISGDVYIYSTNRNQFIYSSKP 67
DB 4 LLSTFTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLFNLS 63
QY 68 SEVNIQANDDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSGWKISLNY 127
DB 64 SKIEVLKNAIVNSMYENFSTFWIRIPKYNFISLNNEYTIINCENNSGWKISLNY 122
QY 128 NKIITWLTQDTAGNNQKL 144
Db 123 GEIITWLTQDTQEIQRV 139

RESULT 8

US-08-915-136-23
; Sequence 23, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; FILING DATE: US/08/915.136
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480.604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405.496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329.154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161.907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985.321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429.791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-915-136-23

Query Match 48.2%; Score 371.5; DB 2; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILFVKLYKKIKDMSILDMRYENKFFIDISGYSNISINGDVYIYSTRNQFGIYSSKP 67
DB 4 LLSTTEYIKNIINTSILNLRYESNHLIDLRYASKINIGSKVNFDPDKKQIQLFNLES 63
QY 68 SEVNTAQNNDIYNGRYONFISFWIRIPKYNKVNLANEYTIIDICIRNNNSGKISLNY 127
DB 64 SKIEVLKNAIVNMYENFSTSFWRIPKYPKYNFNSISLANEYTIINCM-ENNNGWKVSLNY 122

QY 128 NKIIWTLQDTAGNQKL 144
DB 123 GEIIWTLQDTQEIQRV 139

RESULT 9

US-09-084-517-23
; Sequence 23, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/084.517
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329.154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161.907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985.321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429.791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-09-084-517-23

Query Match 48.2%; Score 371.5; DB 2; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILFVKLYKKIKDMSILDMRYENKFFIDISGYSNISINGDVYIYSTRNQFGIYSSKP 67
DB 4 LLSTTEYIKNIINTSILNLRYESNHLIDLRYASKINIGSKVNFDPDKKQIQLFNLES 63
QY 68 SEVNTAQNNDIYNGRYONFISFWIRIPKYNKVNLANEYTIIDICIRNNNSGKISLNY 127
DB 64 SKIEVLKNAIVNMYENFSTSFWRIPKYPKYNFNSISLANEYTIINCM-ENNNGWKVSLNY 122

Db 88 SKIEVILKNAIVNSMYENFSTFWIRPKYFNSISLNEYTIINCM-ENNSGKWSLNY 146
Qy 128 NKIIWTLODTAGNOKL 144
Db 147 GEIIWTLODTQEIQRV 163

RESULT 12
US-08-915-136-26
; Sequence 26, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patentin Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; FILING DATE: US/08/915.136
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480.604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405.496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329.154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161.907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985.321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429.791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40.027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-915-136-26

Query Match 48.2%; Score 371.5; DB 2; Length 462;
Best Local Similarity 49.6%; Pred. No. 8.2e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;

Qy 8 LILYFNKLYKKIKDMSILDMRYENKFPIDTSGYGSNISINGDVYIYSTNRNQFGIYSKP 67
Db 28 LLSTFTTEYIKNIINTSILNLRYESNHLIDLRYASKINIGSKVNFDPIDKNQIQLFNLES 87
Qy 68 SEVNIQONNDIYNGRYQNFESISFWIRPKYFNKVNLANNEYTIIDCIRNNNSGKWSLNY 127
Db 88 SKIEVILKNAIVNSMYENFSTFWIRPKYFNSISLNEYTIINCM-ENNSGKWSLNY 146
Qy 128 NKIIWTLODTAGNOKL 144
Db 147 GEIIWTLODTQEIQRV 163

RESULT 13
US-09-084-517-26
; Sequence 26, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patentin Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; FILING DATE: US/09/084.517
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329.154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161.907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985.321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429.791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32.837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-09-084-517-26

Query Match 48.2%; Score 371.5; DB 2; Length 462;
Best Local Similarity 49.6%; Pred. No. 8.2e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;

QY 8 LILYFNKLYKKIDNSILDMRYENKFDISGYGSNISNGDVYIYSTNRNQFIYSSKP 67
Db 28 LLSTFTYIKNIINTSILNRYESHLIDLSRYASKINIGSKVNFDPIDKQQLFNLIS 87
QY 68 SEVNIQAQNDIIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIDICIRNNNSGWKISLNY 127
Db 88 SKIEVILKNAIVNSMYENFESTSWIRIPKYFNSISLANNEYTIINCW-ENNSGWKISLNY 146
QY 128 NKIIWTLODTAGNNQKL 144
Db 147 GEIITWLODTQEIQRV 163

RESULT 14
US-09-255-829-20
; Sequence 20, Application US/09255829
; Patent No. 6461617
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford Charles
; APPLICANT: Quinn, Conrad Padraig
; APPLICANT: Foster, Keith Alan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; NUMBER OF SEQUENCES: 29
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: STERNE, KESSLER, GOLDSTEIN, & FOX P.L.L.C.
; STREET: 1100 NEW YORK AVENUE, NW, SUITE 600
; CITY: WASHINGTON
; STATE: DC
; COUNTRY: USA
; ZIP: 20005-3934
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patentin Release #1.0, Version #1.30 (EPO)
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/255.829
; FILING DATE: 23-FEB-1999
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB97/02273
; FILING DATE: 22-AUG-1997
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/782,893
; FILING DATE: 27-DEC-1996
; ATTORNEY/AGENT INFORMATION:
; NAME: ESMOND, ROBERT W.
; REGISTRATION NUMBER: 32,893
; REFERENCE/DOCKET NUMBER: 1581.0130002
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 202-371-2600
; TELEFAX: 202-371-2540
; INFORMATION FOR SEQ ID NO: 20:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1169 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-255-829-20

Query Match 46.1%; Score 355; DB 2; Length 1169;
Best Local Similarity 47.3%; Pred. No. 1.5e-28;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;
QY 2 YTNDKILILYFNKLYKKIDNSILDMRYENKFDISGYGSNISNGDVYIYSTNRNQFG 61
Db 843 YTNDTILIEFNKYNSEILNRIYKNNLIDLSGYGAKVEYDGVEL--NDKQKFK 900
QY 62 IYSSKPSVNIQAQNDIIYNGRYQNFISFWVRIPKYFN---KVNLANNEYTIIDICIRNN 118
Db 901 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYKNDGIQNIYHNEYTIINCWK-NN 959
QY 119 SGWKISLNYNKIIWTLODTAGNNQKL 144

Db 960 SGWKISIRGNRIIWTLIDINGKTKSV 985
RESULT 15
US-10-360-101-220
; Sequence 220, Application US/10360101
; Patent No. 6861236
; GENERAL INFORMATION:
; APPLICANT: Moll, Gert N.
; APPLICANT: Leenhouts, Cornelis J.
; TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
; FILE REFERENCE: 2183-5673
; CURRENT APPLICATION NUMBER: US/10/360,101
; PRIOR FILING DATE: 2003-02-07
; PRIOR APPLICATION NUMBER: EP 02077060.8
; PRIOR FILING DATE: 2002-05-24
; NUMBER OF SEQ ID NOS: 309
; SOFTWARE: Patentin version 3.1
; SEQ ID NO 220
; LENGTH: 1290
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: sequence of clostridium botulinum toxin type B
US-10-360-101-220
Query Match 46.1%; Score 355; DB 2; Length 1290;
Best Local Similarity 47.3%; Pred. No. 1.7e-28;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;
QY 2 YTNDKILILYFNKLYKKIDNSILDMRYENKFDISGYGSNISNGDVYIYSTNRNQFG 61
Db 842 YTNDTILIEFNKYNSEILNRIYKNNLIDLSGYGAKVEYDGVEL--NDKQKFK 899
QY 62 IYSSKPSVNIQAQNDIIYNGRYQNFISFWVRIPKYFN---KVNLANNEYTIIDICIRNN 118
Db 900 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYKNDGIQNIYHNEYTIINCWK-NN 958
QY 119 SGWKISLNYNKIIWTLODTAGNNQKL 144
Db 959 SGWKISIRGNRIIWTLIDINGKTKSV 984
Search completed: March 2, 2006, 00:49:33
Job time : 18.7077 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 57.2993 Seconds
(without alignments)
1050.055 Million cell updates/sec

Title: US-08-981-087B-2
Perfect score: 770
Sequence: 1 SYTNKILILYFNKLYKKIK.....LNYNKIIWTLDYAGNNQKL 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA Main:
1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep.*
2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep.*
3: /cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep.*
4: /cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep.*
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6: /cgn2_6/ptodata/1/pubpaa/US11_PUBCOMB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	100.0	144	2	US-08-981-087A-2
2	770	100.0	366	4	US-10-452-024-173
3	770	100.0	431	2	US-08-981-087A-1
4	770	100.0	432	3	US-09-910-186A-16
5	770	100.0	432	3	US-09-910-186A-34
6	770	100.0	432	4	US-10-452-024-178
7	770	100.0	432	4	US-10-452-024-178
8	770	100.0	645	4	US-10-478-516-5
9	770	100.0	657	4	US-10-478-516-6
10	770	100.0	657	4	US-10-478-516-7
11	770	100.0	660	4	US-10-130-973A-12
12	770	100.0	685	4	US-10-130-973A-7
13	770	100.0	862	4	US-10-130-973A-4
14	770	100.0	887	4	US-10-130-973A-6
15	770	100.0	979	4	US-10-478-516-26
16	770	100.0	1032	4	US-10-130-973A-15
17	770	100.0	1092	4	US-10-130-973A-14
18	770	100.0	1192	4	US-10-478-516-23
19	770	100.0	1192	4	US-10-478-516-24
20	770	100.0	1278	4	US-10-452-024-152
21	770	100.0	1278	4	US-10-205-516-12
22	770	100.0	1288	4	US-10-205-516-26
23	626.5	81.4	369	4	US-10-452-024-174
24	626.5	81.4	1274	4	US-10-354-774-71
25	626.5	81.4	1274	4	US-10-271-012-71
26	626.5	81.4	1274	4	US-10-452-024-6
27	626.5	81.4	1274	4	US-10-729-122-71

28	626.5	81.4	1274	4	US-10-729-039-71	Sequence 71, Appl
29	626.5	81.4	1274	5	US-10-729-527-71	Sequence 71, Appl
30	626.5	81.4	1274	5	US-10-727-898-71	Sequence 71, Appl
31	626.5	81.4	1274	5	US-10-728-696-71	Sequence 71, Appl
32	626.5	81.4	1274	6	US-11-001-241-71	Sequence 71, Appl
33	626.5	81.2	1280	4	US-10-452-024-162	Sequence 162, App
34	625	81.2	1268	4	US-10-452-024-156	Sequence 156, App
35	593.5	77.1	448	4	US-10-354-774-73	Sequence 73, Appl
36	593.5	77.1	448	4	US-10-729-122-73	Sequence 73, Appl
37	593.5	77.1	448	4	US-10-729-039-73	Sequence 73, Appl
38	593.5	77.1	448	5	US-10-729-527-73	Sequence 73, Appl
39	593.5	77.1	448	5	US-10-727-898-73	Sequence 73, Appl
40	593.5	77.1	448	5	US-10-728-696-73	Sequence 73, Appl
41	593.5	77.1	448	6	US-11-001-241-73	Sequence 73, Appl
42	593.5	74.2	449	3	US-09-910-186A-14	Sequence 14, Appl
43	571.5	74.2	452	4	US-10-354-774-56	Sequence 56, Appl
44	571.5	74.2	452	4	US-10-271-012-56	Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-2
; Sequence 2, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Paseschnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304A1th Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981.087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 144 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-2

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Query Match      100.0%; Score 770; DB 2; Length 144;
Best Local Similarity 100.0%; Pred. No. 1.2e-64;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60

Qy 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120
Db 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120

Qy 121 WKISLNYNKIILWTLDQTAGNNQKL 144
Db 121 WKISLNYNKIILWTLDQTAGNNQKL 144

RESULT 2
US-10-452-024-173
; Sequence 173, Application US/10452024
; Publication No. US20040013687A1
; GENERAL INFORMATION:
; APPLICANT: Simpson, Lance
; APPLICANT: Park, Jung-Beak
; APPLICANT: Maksymowich, Andrew
; TITLE OF INVENTION: Compositions and Methods For Transsepithelial Molecular Transport
; FILE REFERENCE: 9855-96U1
; CURRENT APPLICATION NUMBER: US/10/452,024
; CURRENT FILING DATE: 2003-06-02
; PRIOR APPLICATION NUMBER: 60/384,949
; PRIOR FILING DATE: 2002-05-31
; NUMBER OF SEQ ID NOS: 188
; SOFTWARE: PatentIn version 3.2
; SEQ ID NO 173
; LENGTH: 366
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-452-024-173

Query Match      100.0%; Score 770; DB 4; Length 366;
Best Local Similarity 100.0%; Pred. No. 3.5e-64;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 214 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 273

Qy 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120
Db 274 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 333

Qy 121 WKISLNYNKIILWTLDQTAGNNQKL 144
Db 334 WKISLNYNKIILWTLDQTAGNNQKL 357

RESULT 3
US-08-981-087A-1
; Sequence 1, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Pasechnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304A1ch Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
```

```
COUNTRY: USA
ZIP: 22201-4741
COMPUTER READABLE FORM: disk
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/981,087A
FILING DATE: 27-MAY-1998
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/GB96/01409
FILING DATE: 12-JUN-1996
APPLICATION DATA:
APPLICATION NUMBER: GB 9511909.5
FILING DATE: 12-JUN-1995
ATTORNEY/AGENT INFORMATION:
NAME: Crawford, Arthur R.
REGISTRATION NUMBER: 25,327
REFERENCE/DOCKET NUMBER: 124-688
TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-816-4000
TELEFAX: 703-816-4100
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
TYPE: amino acid
LENGTH: 431 amino acids
STRANDEDNESS:
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-981-087A-1

Query Match      100.0%; Score 770; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 4.3e-64;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60

Qy 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120
Db 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120

Qy 121 WKISLNYNKIILWTLDQTAGNNQKL 144
Db 121 WKISLNYNKIILWTLDQTAGNNQKL 144

RESULT 4
US-09-910-186A-16
; Sequence 16, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Materiel Command
; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
; FILE REFERENCE: A33626-A 067252.0107
; CURRENT APPLICATION NUMBER: US/09/910,186A
; CURRENT FILING DATE: 2001-07-20
; PRIOR APPLICATION NUMBER: PCT/US00/12890
; PRIOR FILING DATE: 2000-05-12
; PRIOR APPLICATION NUMBER: 09/611,419
; PRIOR FILING DATE: 2000-07-06
; PRIOR APPLICATION NUMBER: 60/133,865
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,866
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,867
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,868
; PRIOR FILING DATE: 1999-05-12
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Db 287 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 346

QY 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 347 WKISLNYNKIIWTLODTAGNNQKL 370

RESULT 11

US-10-130-973A-12

Sequence 12, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, John

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: PCT/GB00/04644

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: GB 9928530.6

PRIOR FILING DATE: 1999-12-02

PRIOR APPLICATION NUMBER: GB 008658.7

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: PatentIn version 3.0

SEQ ID NO 12

LENGTH: 660

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-12

Query Match 100.0%; Score 770; DB 4; Length 660;

Best Local Similarity 100.0%; Pred. No. 7,1e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 60

Db 215 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 274

QY 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 120

Db 275 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 334

QY 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 335 WKISLNYNKIIWTLODTAGNNQKL 358

RESULT 12

US-10-130-973A-7

Sequence 7, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, John

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: PCT/GB00/04644

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: GB 9928530.6

PRIOR FILING DATE: 1999-12-02

PRIOR APPLICATION NUMBER: GB 008658.7

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: PatentIn version 3.0

SEQ ID NO 7

LENGTH: 660

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-7

Query Match 100.0%; Score 770; DB 4; Length 660;

Best Local Similarity 100.0%; Pred. No. 7,1e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 60

Db 215 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 274

QY 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 120

Db 275 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 334

QY 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 335 WKISLNYNKIIWTLODTAGNNQKL 358

LENGTH: 685

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-7

Query Match 100.0%; Score 770; DB 4; Length 685;

Best Local Similarity 100.0%; Pred. No. 7,4e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 60

Db 255 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 314

QY 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 120

Db 315 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 374

QY 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 375 WKISLNYNKIIWTLODTAGNNQKL 398

RESULT 13

US-10-130-973A-4

Sequence 4, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, Clifford

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: PCT/GB00/04644

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: GB 9928530.6

PRIOR FILING DATE: 1999-12-02

PRIOR APPLICATION NUMBER: GB 008658.7

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: PatentIn version 3.0

SEQ ID NO 4

LENGTH: 862

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-4

Query Match 100.0%; Score 770; DB 4; Length 862;

Best Local Similarity 100.0%; Pred. No. 9,7e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 60

Db 432 SYTNDKILILYFNKLYKKIKDNSILDMRYENNKFDIDISGYGSNISINGDVVIYSTNRNQF 491

QY 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 120

Db 492 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNVNLNNEYTIIDCIRNNSG 551

QY 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 552 WKISLNYNKIIWTLODTAGNNQKL 575

RESULT 14

US-10-130-973A-6

Sequence 6, Application US/10130973A

Publication No. US20030147895A1

; GENERAL INFORMATION:
 ; APPLICANT: Shone, Clifford
 ; APPLICANT: Sutton, John
 ; APPLICANT: Silman, Nigel
 ; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
 ; FILE REFERENCE: 1581.0920000
 ; CURRENT APPLICATION NUMBER: US/10/130,973A
 ; CURRENT FILING DATE: 2002-10-21
 ; PRIOR APPLICATION NUMBER: PCT/GB00/04644
 ; PRIOR FILING DATE: 2000-12-04
 ; PRIOR APPLICATION NUMBER: GB 928530.6
 ; PRIOR FILING DATE: 1999-12-02
 ; PRIOR APPLICATION NUMBER: GB 008658.7
 ; PRIOR FILING DATE: 2000-04-07
 ; NUMBER OF SEQ ID NOS: 18
 ; SOFTWARE: PatentIn version 3.0
 ; SEQ ID NO 6
 ; LENGTH: 887
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: synthetic construct
 US-10-130-973A-6

Query Match 100.0%; Score 770; DB 4; Length 887;
 Best Local Similarity 100.0%; Pred. No. 1e-63;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
 Db 457 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 516
 Qy 61 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYFNKVLNNEYYTIIDCIRNNNSG 120
 Db 517 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYFNKVLNNEYYTIIDCIRNNNSG 576
 Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144
 Db 577 WKISLNYNKIIWTLODTAGNNQKL 600

RESULT 15
 US-10-478-516-26
 ; Sequence 26, Application US/10478516
 ; Publication No. US2004020889A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Shone, Clifford C.
 ; APPLICANT: Sutton, John M.
 ; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
 ; FILE REFERENCE: 1581.1000000
 ; CURRENT APPLICATION NUMBER: US/10/478,516
 ; CURRENT FILING DATE: 2003-11-24
 ; PRIOR APPLICATION NUMBER: PCT/GB02/02384
 ; PRIOR FILING DATE: 2002-05-21
 ; PRIOR APPLICATION NUMBER: GB 0112687.9
 ; PRIOR FILING DATE: 2001-05-24
 ; NUMBER OF SEQ ID NOS: 32
 ; SOFTWARE: PatentIn version 3.1
 ; SEQ ID NO 26
 ; LENGTH: 979
 ; TYPE: PRT
 ; ORGANISM: Artificial sequence
 ; FEATURE:
 ; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
 ; OTHER INFORMATION: translocation
 ; OTHER INFORMATION: domain, with Bont/F-HC
 US-10-478-516-26

Query Match 100.0%; Score 770; DB 4; Length 979;
 Best Local Similarity 100.0%; Pred. No. 1.1e-63;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60

Db 549 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 608
 Qy 61 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYFNKVLNNEYYTIIDCIRNNNSG 120
 Db 609 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYFNKVLNNEYYTIIDCIRNNNSG 668
 Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144
 Db 669 WKISLNYNKIIWTLODTAGNNQKL 692

Search completed: March 2, 2006, 01:17:47
 Job time : 57.2993 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:12:18 ; Search time 5.84687 Seconds
(without alignments)
491.279 Million cell updates/sec

Title: US-08-981-087B-2
Perfect score: 770
Sequence: 1 SYTNDKILLYFNKLYKKIK.....LNVNKKIITWLTQDTAGNNQKL 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 133702 seqs, 19947517 residues

Total number of hits satisfying chosen parameters: 133702

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA New:
1: /cgn2_6/ptodata/1/pubpaa/us08_NEW_PUB.pep.*
2: /cgn2_6/ptodata/1/pubpaa/us06_NEW_PUB.pep.*
3: /cgn2_6/ptodata/1/pubpaa/us07_NEW_PUB.pep.*
4: /cgn2_6/ptodata/1/pubpaa/FACT_NEW_PUB.pep.*
5: /cgn2_6/ptodata/1/pubpaa/us09_NEW_PUB.pep.*
6: /cgn2_6/ptodata/1/pubpaa/us10_NEW_PUB.pep.*
7: /cgn2_6/ptodata/1/pubpaa/us11_NEW_PUB.pep.*
8: /cgn2_6/ptodata/1/pubpaa/us60_NEW_PUB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	100.0	1059	7 US/11/062	Sequence 5, Appli
2	770	100.0	1084	7 US/11/062	Sequence 8, Appli
3	626.5	81.4	838	6 US-10-909-769-28	Sequence 28, Appl
4	571.5	74.2	829	6 US-10-909-769-26	Sequence 26, Appl
5	378.5	49.2	849	6 US-10-909-769-18	Sequence 18, Appl
6	378.5	49.2	1067	7 US/11/062	Sequence 3, Appli
7	378.5	49.2	1092	7 US/11/062	Sequence 6, Appli
8	355	46.1	1070	7 US/11/062	Sequence 4, Appli
9	355	46.1	1095	7 US/11/062	Sequence 7, Appli
10	355	46.1	1169	7 US-11-077-550-20	Sequence 20, Appl
11	348	45.2	900	6 US-10-909-769-20	Sequence 20, Appl
12	319	41.4	855	6 US-10-909-769-30	Sequence 30, Appl
13	250	32.5	842	6 US-10-909-769-22	Sequence 22, Appl
14	249.5	32.4	834	6 US-10-909-769-24	Sequence 24, Appl
15	206	26.8	1315	7 US-11-077-550-141	Sequence 141, App
16	85	11.0	3194	7 US-11-052-554A-90	Sequence 90, Appl
17	81	10.5	347	7 US-11-098-686-10240	Sequence 10240, A
18	77.5	10.1	751	7 US-11-052-554A-109	Sequence 109, App
19	76.5	9.9	443	7 US-11-036-532A-131	Sequence 131, App
20	76.5	9.9	1332	7 US-11-091-643-18	Sequence 18, Appl
21	76.5	9.9	1340	7 US-11-070-575-6	Sequence 6, Appli
22	75.5	9.8	357	7 US-11-087-099-3020	Sequence 3020, Ap
23	75.5	9.8	923	7 US-11-057-058-66	Sequence 66, Appl
24	75.5	9.8	1344	7 US-11-091-643-20	Sequence 20, Appl
25	75	9.7	182	6 US-10-793-626-2414	Sequence 2414, Ap

ALIGNMENTS

RESULT 1

US/11/062
; Sequence 5, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1561.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 5
; LENGTH: 1059
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-5

Query Match 100.0%; Score 770; DB 7; Length 1059;
Best Local Similarity 100.0%; Pred. No. 3.1e-63;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILLYFNKLYKKIKNSILDMRYENKFKDISGYGNSISNGDVYIYSTNRNQF 60
DB 629 SYTNDKILLYFNKLYKKIKNSILDMRYENKFKDISGYGNSISNGDVYIYSTNRNQF 688
QY 61 GYSSKSPSEVNAQNNDIIYNGRYQNFISFWRIKPKYFNKVLNNETIIDCIRNNNSG 120
DB 689 GYSSKSPSEVNAQNNDIIYNGRYQNFISFWRIKPKYFNKVLNNETIIDCIRNNNSG 748
QY 121 WKISLNYKKIITWLTQDTAGNNQKL 144
DB 749 WKISLNYKKIITWLTQDTAGNNQKL 772

RESULT 2

US/11/062

; Sequence 8, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassem
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 8
; LENGTH: 1084
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062.471A-8

Query Match 100.0%; Score 770; DB 7; Length 1084;
Best Local Similarity 100.0%; Pred. No. 3.2e-63;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNRLYKIKDNLDMRYENKFKIDISGVGSNISINGDVYIYSTNRNQF 60
Db 654 SYTNDKILILYFNRLYKIKDNLDMRYENKFKIDISGVGSNISINGDVYIYSTNRNQF 713

Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNYEYTIIDCIRNNSG 120
Db 714 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNYEYTIIDCIRNNSG 773

Qy 121 WKISLNYNKKIITWLTQDTAGNNQKL 144
Db 774 WKISLNYNKKIITWLTQDTAGNNQKL 797

RESULT 3
US-10-909-769-28
; Sequence 28, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 28
; LENGTH: 838
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-28

Query Match 81.4%; Score 626.5; DB 6; Length 838;
Best Local Similarity 80.3%; Pred. No. 3.8e-50;
Matches 118; Conservative 14; Mismatches 13; Indels 3; Gaps 1;

Qy 1 SYTNDKILILYFNRLYKIKDNLDMRYENKFKIDISGVGSNISINGDVYIYSTNRNQF 60

Db 411 SYTNDKILILYFNRLYKIKDNLDMRYENKFKIDISGVGSNISINGDVYIYSTNRNQF 470

Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNYEYTIIDCIRNNSG 120
Db 471 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNYEYTIIDCIRNNSG 530

Qy 121 WKISLNYNKKIITWLTQDTAGNNQKL 144
Db 531 WKISLNYNKKIITWLTQDTAGNNQKL 557

RESULT 4
US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-26

Query Match 74.2%; Score 571.5; DB 6; Length 829;
Best Local Similarity 71.7%; Pred. No. 4.2e-45;
Matches 104; Conservative 25; Mismatches 15; Indels 1; Gaps 1;

Qy 1 SYTNDKILILYFNRLYKIKDNLDMRYENKFKIDISGVGSNISINGDVYIYSTNRNQF 60
Db 406 SYTDDKILISYFNKFKRIKSSSVLNNRYKNDKYVDTSYDSSNININGDVYKYPTNNQF 465

Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNYEYTIIDCIRNNSG 119
Db 466 GYNDKLSSEVNISQNDYIYDNYKFNPSISFWVRIPKYFNKVLNNYEYTIIDCIRNNSG 525

Qy 120 GWKISLNYNKKIITWLTQDTAGNNQKL 144
Db 526 GWKISLNYNKKIITWLTQDTAGNNQKL 550

RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence

```

;
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-18

Query Match          49.2%; Score 378.5; DB 6; Length 849;
Best Local Similarity 48.3%; Pred. No. 2.4e-27;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy  2 YTNDKIILLYFNKLYKKIKNSILDMRYENKFKIDISGYSNISNGVDVYIYSTNRNFG 61
Db  409 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVANFPDPIDKQIQ 469
Qy  62 IYSSKPSVNAQNNDIYNGRYQNFISFWVRIPKYNKVNLANNEYTIIDCIRNNNSGW 121
Db  469 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLANNEYTIINCM-ENNSGW 527
Qy  122 KISLNNYKIIWTLODTAGNNQKL 144
Db  528 KVSILNYGEIITWLTQDTQEIQRV 550

RESULT 6
US/11/062
; Sequence 3, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; PRIOR FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 3
; LENGTH: 1067
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-3

Query Match          49.2%; Score 378.5; DB 7; Length 1067;
Best Local Similarity 48.3%; Pred. No. 3.2e-27;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy  2 YTNDKIILLYFNKLYKKIKNSILDMRYENKFKIDISGYSNISNGVDVYIYSTNRNFG 61
Db  627 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVANFPDPIDKQIQ 686
Qy  62 IYSSKPSVNAQNNDIYNGRYQNFISFWVRIPKYNKVNLANNEYTIIDCIRNNNSGW 121
Db  687 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLANNEYTIINCM-ENNSGW 745
Qy  122 KISLNNYKIIWTLODTAGNNQKL 144
Db  746 KVSILNYGEIITWLTQDTQEIQRV 768

RESULT 7
US/11/062
; Sequence 6, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles

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; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; PRIOR FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 6
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match          49.2%; Score 378.5; DB 7; Length 1092;
Best Local Similarity 48.3%; Pred. No. 3.2e-27;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy  2 YTNDKIILLYFNKLYKKIKNSILDMRYENKFKIDISGYSNISNGVDVYIYSTNRNFG 61
Db  652 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVANFPDPIDKQIQ 711
Qy  62 IYSSKPSVNAQNNDIYNGRYQNFISFWVRIPKYNKVNLANNEYTIIDCIRNNNSGW 121
Db  712 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLANNEYTIINCM-ENNSGW 770
Qy  122 KISLNNYKIIWTLODTAGNNQKL 144
Db  771 KVSILNYGEIITWLTQDTQEIQRV 793

RESULT 8
US/11/062
; Sequence 4, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; PRIOR FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 4
; LENGTH: 1070
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-4

Query Match          46.1%; Score 355; DB 7; Length 1070;
Best Local Similarity 47.3%; Pred. No. 4.6e-25;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;

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QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFFIDISGYGNSISINGDVVIYSTNRNQF 61
Db 622 YTNDTILIEFMFNKYNSEILNLLRLRYKNNLIDLSGYGAKVEYDGVGL--NDKNQFK 679
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFSPISFWIRIPKYPN---KVNLNNEYTIIDCIRNN 118
Db 680 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNKDGQNIYHNEYTIINCWK--NN 738
QY 119 SGWKISLNNYKIIWTLODTAGNNQKL 144
Db 739 SGWKISIRGNRIIWTLIDINGKTKSV 764

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RESULT 9
US/11/062
; Sequence 7, Application US/11062471A
; Publication No. US2005025093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Basam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; PRIOR FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 7
; LENGTH: 1095
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-7

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Query Match 46.1%; Score 355; DB 7; Length 1095;
Best Local Similarity 47.3%; Pred. No. 4.7e-25;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;

QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFFIDISGYGNSISINGDVVIYSTNRNQF 61
Db 647 YTNDTILIEFMFNKYNSEILNLLRLRYKNNLIDLSGYGAKVEYDGVGL--NDKNQFK 704
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFSPISFWIRIPKYPN---KVNLNNEYTIIDCIRNN 118
Db 705 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNKDGQNIYHNEYTIINCWK--NN 763
QY 119 SGWKISLNNYKIIWTLODTAGNNQKL 144
Db 764 SGWKISIRGNRIIWTLIDINGKTKSV 789

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RESULT 10
US-11-077-550-20
; Sequence 20, Application US/11077550
; Publication No. US2005024435A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford Charles
; APPLICANT: Quinn, Conrad Padraig
; APPLICANT: Foster, Keith Alan
; APPLICANT: Chaddock, John
; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments

```

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; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR FILING DATE: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 20
; LENGTH: 1169
; TYPE: PRT
; ORGANISM: Clostridium botulinum
; OTHER INFORMATION:
US-11-077-550-20

Query Match 46.1%; Score 355; DB 7; Length 1169;
Best Local Similarity 47.3%; Pred. No. 5.1e-25;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;

QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFFIDISGYGNSISINGDVVIYSTNRNQF 61
Db 843 YTNDTILIEFMFNKYNSEILNLLRLRYKNNLIDLSGYGAKVEYDGVGL--NDKNQFK 900
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFSPISFWIRIPKYPN---KVNLNNEYTIIDCIRNN 118
Db 901 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNKDGQNIYHNEYTIINCWK--NN 959
QY 119 SGWKISLNNYKIIWTLODTAGNNQKL 144
Db 960 SGWKISIRGNRIIWTLIDINGKTKSV 985

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RESULT 11
US-10-909-769-20
; Sequence 20, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 20
; LENGTH: 900
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-20

```

```

Query Match 45.2%; Score 348; DB 6; Length 900;
Best Local Similarity 45.6%; Pred. No. 1.7e-24;
Matches 67; Conservative 35; Mismatches 39; Indels 6; Gaps 3;

QY 1 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFFIDISGYGNSISINGDVVIYSTNRNQF 60
Db 451 TYSNIEILIKIFNKYNSEILNLLRLRYKNNLIDLSGYGAKVEYDGVGL--NDKNQFK 508
QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFSPISFWIRIPKYPN---KVNLNNEYTIIDCIRNN 117

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Db 509 KLTSSADSKIRVTQNIQIFNSMFLDVSFWRIPKRYRNDIQNIYHNEYTIINCWK-N 567
 Qy 118 NSGKISLNNYKIIWTLODTAGNNQKL 144
 Db 568 NSGKISIRGNRIIWTLIDINGKTKSV 594

RESULT 12
 US-10-909-769-30
 ; Sequence 30, Application US/10909769
 ; Publication No. US20060024331A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Fernandez-Salas, Ester
 ; APPLICANT: Steward, Lance E.
 ; APPLICANT: Lin, Wei-Jen
 ; APPLICANT: Aoki, Kei Roger
 ; APPLICANT: Sachs, George
 ; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
 ; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
 ; CURRENT APPLICATION NUMBER: US/10/909,769
 ; CURRENT FILING DATE: 2004-08-02
 ; NUMBER OF SEQ ID NOS: 34
 ; SOFTWARE: PatentIn version 3.3
 ; SEQ ID NO 30
 ; LENGTH: 855
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Amino acid sequence of HC
 US-10-909-769-30

Query Match 41.4%; Score 319; DB 6; Length 855;
 Best Local Similarity 41.8%; Pred. No. 7.3e-22;
 Matches 61; Conservative 26; Mismatches 55; Indels 4; Gaps 2;

Qy 2 YTNDKILLYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 61
 Db 406 YTKDTILQVNNYISNLSNAISLRYGRLDSSYGATMVGSDVIFNDIGNQF 465

Qy 62 IYSSKPSVNIQNDIIYNGRYQNFISFWVRIPKRYFN--KVNLNNEYTIIDCIRNN 118
 Db 466 LNNSENSNITAHQSFVYDMSFNFNSFNFWRTPKYNNDIQTVLQNEYTIISCIK-ND 524

Qy 119 SGWKISLNNYKIIWTLODTAGNNQKL 144
 Db 525 SGWKISIRGNRIIWTLIDVNAKSKSI 550

RESULT 13
 US-10-909-769-22
 ; Sequence 22, Application US/10909769
 ; Publication No. US20060024331A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Fernandez-Salas, Ester
 ; APPLICANT: Steward, Lance E.
 ; APPLICANT: Lin, Wei-Jen
 ; APPLICANT: Aoki, Kei Roger
 ; APPLICANT: Sachs, George
 ; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
 ; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
 ; CURRENT APPLICATION NUMBER: US/10/909,769
 ; CURRENT FILING DATE: 2004-08-02
 ; NUMBER OF SEQ ID NOS: 34
 ; SOFTWARE: PatentIn version 3.3
 ; SEQ ID NO 22
 ; LENGTH: 842
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Amino acid sequence of HC
 US-10-909-769-22

Query Match 32.5%; Score 250; DB 6; Length 842;
 Best Local Similarity 37.7%; Pred. No. 1.6e-15;
 Matches 55; Conservative 30; Mismatches 55; Indels 6; Gaps 4;

Qy 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 Db 401 SYTNSSLKDIINEYFNINDSKILSLQNKRLVDTSGYNAEVSEGDVQLNPFPDF 460

Qy 61 GIYSS--KPSVNIQNDIIYNGRYQNFISFWVRIPKRYFNKVNLNNEYTIIDCIRNN 118
 Db 461 KLGSSGEDRGKVITQNEIVNMYESFISFWIRINKWVS--NLPG-YTIIDSVK-NN 516

Qy 119 SGWKISLNNYKIIWTLODTAGNNQKL 144
 Db 517 SGWSIGIISFLVETLKQNEDEQSI 542

RESULT 14
 US-10-909-769-24
 ; Sequence 24, Application US/10909769
 ; Publication No. US20060024331A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Fernandez-Salas, Ester
 ; APPLICANT: Steward, Lance E.
 ; APPLICANT: Lin, Wei-Jen
 ; APPLICANT: Aoki, Kei Roger
 ; APPLICANT: Sachs, George
 ; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
 ; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
 ; CURRENT APPLICATION NUMBER: US/10/909,769
 ; CURRENT FILING DATE: 2004-08-02
 ; NUMBER OF SEQ ID NOS: 34
 ; SOFTWARE: PatentIn version 3.3
 ; SEQ ID NO 24
 ; LENGTH: 834
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Amino acid sequence of HC
 US-10-909-769-24

Query Match 32.4%; Score 249.5; DB 6; Length 834;
 Best Local Similarity 36.4%; Pred. No. 1.7e-15;
 Matches 52; Conservative 32; Mismatches 52; Indels 7; Gaps 4;

Qy 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 Db 404 SYTNSSLKDIINEYFNINDSKILSLQNKRLVDTSGYNAEVSEGDVQLNPFPDF 463

Qy 61 GIYSSKPSVNIQNDIIYNGRYQNFISFWVRIPKRYFNKVNLNNEYTIIDCIRNN 120
 Db 464 KL-SSGDKIIVNLLNLLYSAIYENSVSWIKSK--DLTNSHNEYTIINSI-EQNSG 519

Qy 121 WKISLNNYKIIWTLODTAGNNQKL 143
 Db 520 WKLCIRNGNIEWILODV---NRK 539

RESULT 15
 US-11-077-550-141
 ; Sequence 141, Application US/11077550
 ; Publication No. US20050244435A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Shone, Clifford Charles
 ; APPLICANT: Quinn, Conrad Padraig
 ; APPLICANT: Foster, Keith Alan
 ; APPLICANT: Chaddock, John
 ; APPLICANT: Marks, Philip
 ; APPLICANT: Sutton, J. Mark
 ; APPLICANT: Stancombe, Patrick
 ; APPLICANT: Wayne, Jonathan
 ; TITLE OF INVENTION: Recombinant Toxin Fragments
 ; FILE REFERENCE: 1591.0130004

```

; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 141
; LENGTH: 1315
; TYPE: PRT
; ORGANISM: Clostridium tetani
US-11-077-550-141

Query Match      26.8%; Score 206; DB 7; Length 1315;
Best Local Similarity 33.3%; Pred. No. 2.9e-11;
Matches 45; Conservative 35; Mismatches 45; Indels 10; Gaps 4;

QY 19 IKDNSILDMRYENKPFIDISGYGNSISINGDVYIY-STNRNQFGIYSSKPSVNIQNND 77
Db 881 LKKSTILNLDINNDIISDISGFSNVITYPDQLVPGINGKAIHLVNNESEVIVHKAMD 940

QY 78 IYNGRYQNFSSISFWVRIPKPFKNVL---NNEYTIIDCIRNN---SGWKISLANYK 129
Db 941 IEYNDMPNFTVSFWLRYPK-VSASHLEQYGTNEYSISSMKKHSLSIGSGWSVSLKGN 999

QY 130 LIWLTQDTAGNNQKL 144
Db 1000 LIWTLKDSAGEVRQI 1014

```

Search completed: March 2, 2006, 01:18:29
Job time : 6:84687 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:31:42 ; Search time 68.993 Seconds

(without alignments)
917.057 Million cell updates/sec

Title: US-08-981-087b-3

Perfect score: 761

Sequence: 1 VFNYTQMISDYNKWFV.....ITQNSNFLNQQGVYQKP 144

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : A Geneseq 21:*

- 1: geneseqp1980s:*
- 2: geneseqp1990s:*
- 3: geneseqp2000s:*
- 4: geneseqp2001s:*
- 5: geneseqp2002s:*
- 6: geneseqp2003as:*
- 7: geneseqp2003bs:*
- 8: geneseqp2004s:*
- 9: geneseqp2005s:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	761	100.0	144	AAW09016	Immunogen
2	761	100.0	431	AAW09014	Immunogen
3	761	100.0	432	AAW09014	Immunogen
4	761	100.0	432	AAW09014	Immunogen
5	761	100.0	432	AAW09014	Immunogen
6	761	100.0	432	AAW09014	Immunogen
7	761	100.0	432	AAW09014	Immunogen
8	761	100.0	432	AAW09014	Immunogen
9	761	100.0	432	AAW09014	Immunogen
10	761	100.0	432	AAW09014	Immunogen
11	761	100.0	432	AAW09014	Immunogen
12	761	100.0	432	AAW09014	Immunogen
13	761	100.0	432	AAW09014	Immunogen
14	761	100.0	432	AAW09014	Immunogen
15	761	100.0	432	AAW09014	Immunogen
16	761	100.0	432	AAW09014	Immunogen
17	761	100.0	432	AAW09014	Immunogen
18	761	100.0	432	AAW09014	Immunogen
19	761	100.0	432	AAW09014	Immunogen
20	761	100.0	432	AAW09014	Immunogen
21	497.5	65.4	419	AAW09014	Immunogen
22	497.5	65.4	419	AAW09014	Immunogen
23	497.5	65.4	419	AAW09014	Immunogen
24	497.5	65.4	419	AAW09014	Immunogen

25	495.5	65.1	451	2	AAW68395	AAW68395 Clostridi
26	466	61.2	660	4	AAE07898	AAE07898 Modified
27	440.5	57.9	382	3	AAE07898	AAE07898 Modified
28	440.5	57.9	382	3	AAE07898	AAE07898 Modified
29	440.5	57.9	382	9	ADZ60271	ADZ60271 C botulin
30	440.5	57.9	382	9	ADZ60271	ADZ60271 C botulin
31	440.5	57.9	425	9	ADZ60276	ADZ60276 BONT/A pr
32	440.5	57.9	432	3	AAW77142	AAW77142 Native bo
33	440.5	57.9	434	4	AAW04089	AAW04089 Botulism
34	440.5	57.9	435	4	AAW04089	AAW04089 Botulism
35	440.5	57.9	437	4	AAW04088	AAW04088 Botulism
36	440.5	57.9	438	2	AAW50008	AAW50008 Type A ne
37	440.5	57.9	438	2	AAW50008	AAW50008 Type A ne
38	440.5	57.9	445	3	AAW77134	AAW77134 Synthetic
39	440.5	57.9	445	2	AAW68391	AAW68391 Clostridi
40	440.5	57.9	462	2	AAW50009	AAW50009 Type A ne
41	440.5	57.9	462	2	AAW68390	AAW68390 Clostridi
42	440.5	57.9	837	3	AAW77140	AAW77140 Native bo
43	440.5	57.9	859	9	ADZ69764	ADZ69764 Botulinum
44	440.5	57.9	1067	3	AAW93307	AAW93307 A mangane
45	440.5	57.9	1092	3	AAW93310	AAW93310 A mangane
			1295	5	AAU99339	AAU99339 Clostridi

ALIGNMENTS

RESULT 1

AAW09016
ID AAW09016 standard; protein; 144 AA.

XX AC AAW09016;

XX AC AAW09016;

DT 17-OCT-2003 (revised)

DT 31-MAR-1997 (first entry)

XX Immunogenic type F botulinum toxin polypeptide (aa992-1135).

DE Botulinum toxin; neurotoxin; BoBT/F; immunogen; vaccine; botulism.

XX Botulinum toxin; neurotoxin; BoBT/F; immunogen; vaccine; botulism.

XX Clostridium botulinum; type F strain Langeland.

XX WO9641881-A1.

XX 27-DEC-1996.

XX 12-JUN-1996; 96WO-GB001409.

XX 12-JUN-1995; 95GB-00011909.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;

XX WPI; 1997-065467/06.

XX Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

XX Claim 5; Page 18-19; 37pp; English.

XX Novel polypeptides (AAW09014-17) respectively comprise amino acids 848-1278, 848-991, 992-1135 and 1136-1278 in the heavy chain of a type F botulinum neurotoxin (BoNT/F). They lack the L chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn.

XX Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

XX Sequence 144 AA;

XX Query Match 100.0%; Score 761; DB 2; Length 144;

Best Local Similarity 100.0%; Pred. No. 6.2e-74; Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVTITNNRNGSRINGNLIDEKSIINLGDHIVSDNIIILFKI 60
 DB 1 VFNYTQMISISDYINKWIFVTITNNRNGSRINGNLIDEKSIINLGDHIVSDNIIILFKI 60
 QY 61 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLLNKRYLLNLLR 120
 DB 61 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLLNKRYLLNLLR 120
 QY 121 TDKSITQNSNLFNINQORGYYQKP 144
 DB 121 TDKSITQNSNLFNINQORGYYQKP 144

RESULT 2

AAW09014
 ID AAW09014 standard; protein; 431 AA.

XX AC AAW09014;

XX 17-OCT-2003 (revised)

DT 31-MAR-1997 (first entry)

XX Immunogenic type F botulinum toxin heavy chain (aa848-1278).

XX Botulinum toxin; neurotoxin; BoB/F; immunogen; vaccine; botulism.

XX Clostridium botulinum; type F strain Langeland.

XX WO9641881-A1.

XX 27-DEC-1996.

XX 12-JUN-1996; 96WO-GB001409.

XX 12-JUN-1995; 95GB-00011909.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;

XX WPI: 1997-065467/06.
 XX N-PSDB; AAT48100.

XX Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

XX Claim 5; Page 16-17; 37pp; English.

XX A polypeptide (AAW09014) comprises the heavy chain (amino acids 848-1278) of a type F botulinum neurotoxin (BoNT/F), and can be produced using a synthetic gene (AAT48101) based on the natural gene sequence (AAT48100) for the heavy chain. The polypeptides and its fragments (see also AAW09015-17) lack the light chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

XX Sequence 431 AA;

Query Match 100.0%; Score 761; DB 2; Length 431;
 Best Local Similarity 100.0%; Pred. No. 2.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVTITNNRNGSRINGNLIDEKSIINLGDHIVSDNIIILFKI 60
 DB 145 VFNYTQMISISDYINKWIFVTITNNRNGSRINGNLIDEKSIINLGDHIVSDNIIILFKI 204

QY 61 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLLNKRYLLNLLR 120
 DB 205 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLLNKRYLLNLLR 264
 QY 121 TDKSITQNSNLFNINQORGYYQKP 144
 DB 265 TDKSITQNSNLFNINQORGYYQKP 288

RESULT 3

AAW77138

ID AAW77138 standard; protein; 432 AA.

XX AC AAW77138;

XX 08-MAY-2000 (first entry)

XX Synthetic botulinum neurotoxin serotype F (BoNTF) C-terminal fragment.

XX Botulinum neurotoxin; heavy chain; BoNT; serotype F; C-terminal fragment;

XX Venezuelan equine encephalitis virus replicon; VEE; botulism; vaccine; diagnosis; drug screening.

XX Clostridium botulinum.

XX Synthetic.

XX WO200002524-A2.

XX 20-JAN-2000.

XX 09-JUL-1999; 99WO-US015570.

XX 10-JUL-1998; 98US-0092416P.

XX 12-MAY-1999; 99US-0133870P.

XX (USME-) US MEDICAL RES INST INFECTIOUS DISEASES.

XX Lee JS, Pushko P, Smith JP, Parker M, Dertzbaugh MT, Smith L;

XX WPI: 2000-160827/14.

XX N-PSDB; AAZ87216.

XX Novel Botulinum neurotoxin vaccine comprising a fragment from botulinum toxin serotypes A-G, is used for inducing an immune response against botulinum.

XX Claim 27; Page; 54pp; English.

XX The invention relates to novel vaccines that induce a protective immune response against botulinum neurotoxin (BoNT) serotypes A, B, C, D, E, F and G (BoNTA-BoNTG). The vaccine of the invention is novel recombinant DNA construct comprising a vector, and at least one nucleic acid fragment comprising a C-terminal heavy chain fragment (Hc) from BoNT serotypes A-G. In preferred embodiments of the invention, the vector is a Venezuelan equine encephalitis virus (VEE) replicon vector. Use of this vector results in the production of large amounts of a protein encoded by a sequence cloned into the replicon. The constructs are used to produce vaccines against botulism. The proteins can also be used as diagnostic tools for the diagnosis of botulism. The transformed host cells can be used to analyse the effectiveness of drugs and agents which inhibit toxin effects. The vaccine currently used against botulism is dangerous and expensive to produce, and contains formalin, which is very painful for the recipient. Also, the vaccine is incomplete, in that only 5 of the 7 serotypes are represented in the formulation. The novel vaccine of overcomes these problems, as it is easily purified, and available in large quantities. It is also expressed in the lymph nodes for a better immune response. Sequences AAY77134-Y77139 represent synthetic BoNT Hc fragments used in the present invention. The DNA encoding these sequences had been optimised for codon usage for expression in yeast. Note: This sequence is not given in the specification, but is decoded from the BoNTF Hc DNA sequence given on pages 45-46

XX Sequence 432 AA;

Query Match 100.0%; Score 761; DB 3; Length 432;
 Best Local Similarity 100.0%; Pred. No. 2.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
 DB 146 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 205

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 120
 DB 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 265

QY 121 TDKSITQNSNLFNINQOQGVYQKP 144
 DB 266 TDKSITQNSNLFNINQOQGVYQKP 289

RESULT 4
 AAB04103
 ID AAB04103 standard; protein; 432 AA.

AC AAB04103;
 XX
 XX
 XX 11-APR-2001 (first entry)
 DE Botulinum toxin heavy chain C-terminal sequence (serotype F).
 DE Botulinum toxin; neurotoxin; heavy chain; recombinant expression;
 KW recombinant vector; antigen; immune response; vaccine; bacterium;
 KW infection.

XX Synthetic.
 OS Clostridium botulinum.
 XX WO200067700-A2.

XX 16-NOV-2000.
 XX 12-MAY-2000; 2000WO-US012890.
 XX 12-MAY-1999; 99US-0133865P.
 PR 12-MAY-1999; 99US-0133866P.
 PR 12-MAY-1999; 99US-0133867P.
 PR 12-MAY-1999; 99US-0133868P.
 PR 12-MAY-1999; 99US-0133869P.
 PR 12-MAY-1999; 99US-0133873P.
 PR 29-JUL-1999; 99US-0146192P.

XX (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

XX Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

XX WPI; 2001-016048/02.
 DR N-PSDB; AAA54499.

XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
 PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
 PT against botulism.

XX Disclosure; Fig 18b; 73pp; English.

XX Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain
 CC and then posttranslationally nicked, forming a dichain consisting of a
 CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
 CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
 CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)
 CC can be used in recombinant expression vectors and expressed in
 CC transformed cells to produce peptide antigens useful for eliciting an
 CC immune response to give protective immunity against botulinum neurotoxin,
 CC which causes botulism. The nucleic acids are expressible in a recombinant
 CC organisms such as Escherichia coli or Pichia pastoris. The use of
 CC recombinant nucleic acids are advantageous since it eliminates the need

CC to culture large quantities of hazardous toxin-producing bacterium.
 CC Production yield from the genetically engineered product is also high and
 CC cost of production is lower. The nucleic acids can be derived from
 CC Clostridium botulinum serotypes A-G

SQ Sequence 432 AA;

Query Match 100.0%; Score 761; DB 4; Length 432;
 Best Local Similarity 100.0%; Pred. No. 2.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
 DB 146 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 205

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 120
 DB 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 265

QY 121 TDKSITQNSNLFNINQOQGVYQKP 144
 DB 266 TDKSITQNSNLFNINQOQGVYQKP 289

RESULT 5
 AAB04096
 ID AAB04096 standard; protein; 432 AA.

AC AAB04096;

XX 11-APR-2001 (first entry)

XX Botulinum toxin heavy chain C-terminal sequence (serotype F).

XX Botulinum toxin; neurotoxin; heavy chain; recombinant expression;
 KW recombinant vector; antigen; immune response; vaccine; bacterium;
 KW infection.

XX Synthetic.
 OS Clostridium botulinum.
 XX WO200067700-A2.

XX 16-NOV-2000.

XX 12-MAY-2000; 2000WO-US012890.
 XX 12-MAY-1999; 99US-0133865P.
 PR 12-MAY-1999; 99US-0133866P.
 PR 12-MAY-1999; 99US-0133867P.
 PR 12-MAY-1999; 99US-0133868P.
 PR 12-MAY-1999; 99US-0133869P.
 PR 12-MAY-1999; 99US-0133873P.
 PR 29-JUL-1999; 99US-0146192P.

XX (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

XX Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

XX WPI; 2001-016048/02.
 DR N-PSDB; AAA54499.

XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
 PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
 PT against botulism.

XX Claim 3; Fig 9b; 73pp; English.

XX Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain
 CC and then posttranslationally nicked, forming a dichain consisting of a
 CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
 CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
 CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)

CC can be used in recombinant expression vectors and expressed in
CC transformed cells to produce peptide antigens useful for eliciting an
CC immune response to give protective immunity against botulinum neurotoxin,
CC which causes botulism. The nucleic acids are expressible in a recombinant
CC organisms such as *Escherichia coli* or *Pichia pastoris*. The use of
CC recombinant nucleic acids are advantageous since it eliminates the need
CC to culture large quantities of hazardous toxin-producing bacterium.
CC Production yield from the genetically engineered product is also high and
CC cost of production is lower. The nucleic acids can be derived from
CC Clostridium botulinum serotypes A-G

XX SQ Sequence 432 AA;

Query Match 100.0%; Score 761; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 2.6e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 146 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 205
Qy 61 VGCNDTRYVGIRYFKVDFTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 206 VGCNDTRYVGIRYFKVDFTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 265
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 266 TDKSITQNSNLFNLINQQRGVYQKP 289

RESULT 6
AAE07894
ID AAE07894 standard; protein; 645 AA.

XX AC AAE07894;

XX DT 11-SEP-2003 (revised)
XX DT 01-NOV-2001 (first entry)

XX DE Modified clostridial heavy chain fragment #1.

XX KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
XX KW tumour; infection; neurodegenerative disease; Gene therapy; chimeric;
XX KW diphtheria neurotoxin; botulinum neurotoxin type F; BoNT/F.

XX OS Corynebacterium diphtheriae.
XX OS Clostridium botulinum.
XX OS Chimeric.

XX PN WO200158936-A2.

XX PD 16-AUG-2001.

XX PF 04-DEC-2000; 2000WO-GB004644.

XX PR 02-DEC-1999; 99GB-00028530.

XX PR 07-APR-2000; 2000GB-00008658.

XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX PI Shone CC, Sutton JM, Silman N;

XX PR WPI; 2001-514643/56.

XX DR New non toxic polypeptide for delivery of a therapeutic agent for the
XX treatment of a CNS disorder comprising a binding domain that translocates
XX the therapeutic agent into the neuronal cells.

XX PS Example 2; Page 44; 50pp; English.

XX CC The invention relates to a non toxic polypeptide, for delivery of a
XX therapeutic agent to a neuronal cell, which comprises a binding domain
XX (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as

CC Hc) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial toxin. Polypeptides of the invention are
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
CC and infection. They are also useful in gene therapy. The present sequence
CC is modified clostridial heavy chain fragment. This sequence is
CC constructed by fusing the binding domain of botulinum neurotoxin type F
CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
CC 11-SEP-2003 to standardise OS field)

XX SQ Sequence 645 AA;

Query Match 100.0%; Score 761; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 4.3e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 359 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 418
Qy 61 VGCNDTRYVGIRYFKVDFTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 419 VGCNDTRYVGIRYFKVDFTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 478
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 479 TDKSITQNSNLFNLINQQRGVYQKP 502

RESULT 7
AAE35692

ID AAE35692 standard; protein; 645 AA.

XX AC AAE35692;

XX DT 23-OCT-2003 (revised)

XX DT 17-JUN-2003 (first entry)

XX DE DiPT HN domain-BoNT/F-Hc fusion construct.

XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
XX KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
XX KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
XX KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
XX KW translocation domain; HN domain; DiPT; Hc; botulinum type F neurotoxin;
XX KW binding domain; BoNT/F.

XX OS Corynebacterium diphtheriae.

XX OS Clostridium botulinum.

XX OS Chimeric.

XX PN WO200296467-A2.

XX PD 05-DEC-2002.

XX PF 21-MAY-2002; 2002WO-GB002384.

XX PR 24-MAY-2001; 2001GB-00013687.

XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX PI Sutton JM, Shone CC;

XX PR WPI; 2003-167247/16.

XX PT Conjugate for modulating cell survival and cell growth, modulating
XX release of inflammatory mediator from cells, comprises injected bacterial
XX effector protein and a carrier that targets the protein to target cell.

XX PS Example 12; Page 57-60; 130pp; English.

XX CC The invention relates to a conjugate comprising an injected bacterial

CC effecter protein and a carrier that targets the effector protein to a

CC target cell. Pharmaceutical composition of the invention is useful for a

CC treatment selected from promoting or inhibiting survival of cells;

CC preventing and reversing damage to cells; killing cells; promoting or

CC inhibiting the growth of cells; apoptosis, release of an inflammatory

CC mediator from cells, division of cells and treating intracellular

CC infection and regulating nitric oxide release from cells. The invention

CC is useful in the manufacture of a medicament for treating a neuronal

CC trafficking, for modulating expression of cell-surface markers and for

CC cell, for intracellular infection, for interfering with intracellular

CC trafficking, for modulating expression of cell-surface markers and for

CC inhibiting secretion from cells. The invention is also useful for

CC treating Prion disease, Alzheimer' disease and wide range of disorders

CC including muscle spasms such as blepharospasm, torticollis and

CC hypersecretion disorders such as chronic obstructive pulmonary disease

CC (COPD), bronchitis and asthma. The present sequence is a fusion construct

CC comprising Corynebacterium diphtheriae diphtheria toxin translocation

CC domain (Dip-HN domain) and botulinum type F neurotoxin from Clostridium

CC botulinum. This sequence is used in the exemplification of the invention.

CC (Updated on 23-OCT-2003 to standardise OS field)

XX SQ Sequence 645 AA;

Query Match 100.0%; Score 761; DB 6; Length 645;

Best Local Similarity 100.0%; Pred. No. 4.3e-73;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISNLGDIHVSDNLFKI 60

DB 359 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISNLGDIHVSDNLFKI 418

QY 61 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNLLR 120

DB 419 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNLLR 478

QY 121 TDKSITQNSFLNINQQRGVYQKP 144

DB 479 TDKSITQNSFLNINQQRGVYQKP 502

RESULT 8

AAE35693

ID AAE35693 standard; protein; 657 AA.

XX AC AAE35693;

XX DT 17-JUN-2003 (first entry)

XX DE BoNT/F-Hc-DipT HN domain-thrombin linker fusion construct.

XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;

XX infection; Prion disease; Alzheimer' disease; hypersecretion disorder;

XX muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;

XX torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;

XX BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;

XX botulinum type F neurotoxin.

XX OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Unidentified.

XX OS Chimeric.

XX WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX

(MICR-) MICROBIOLOGICAL RES AUTHORITY.

Sutton JW, Shone CC;

WPI; 2003-167247/16.

Conjugate for modulating cell survival and cell growth, modulating

release of inflammatory mediator from cells, comprises injected bacterial

effector protein and a carrier that targets the protein to target cell.

Example 12; Page 60-63; 130pp; English.

The invention relates to a conjugate comprising an injected bacterial

effector protein and a carrier that targets the effector protein to a

target cell. Pharmaceutical composition of the invention is useful for a

treatment selected from promoting or inhibiting survival of cells;

preventing and reversing damage to cells; killing cells; promoting or

inhibiting the growth of cells; apoptosis, release of an inflammatory

mediator from cells, division of cells and treating intracellular

infection and regulating nitric oxide release from cells. The invention

is useful in the manufacture of a medicament for treating a neuronal

cell, for intracellular infection, for interfering with intracellular

trafficking, for modulating expression of cell-surface markers and for

cell, for intracellular infection, for interfering with intracellular

trafficking, for modulating expression of cell-surface markers and for

inhibiting secretion from cells. The invention is also useful for

treating Prion disease, Alzheimer' disease and wide range of disorders

including muscle spasms such as blepharospasm, torticollis and

hypersecretion disorders such as chronic obstructive pulmonary disease

(COPD), bronchitis and asthma. The present sequence is a fusion construct

comprising Corynebacterium diphtheriae diphtheria toxin translocation

domain (Dip-HN domain), botulinum type F neurotoxin binding domain

(BoNT/F-Hc) from Clostridium botulinum and thrombin linker peptide. This

sequence is used in the exemplification of the invention

Sequence 657 AA;

Query Match 100.0%; Score 761; DB 6; Length 657;

Best Local Similarity 100.0%; Pred. No. 4.4e-73;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISNLGDIHVSDNLFKI 60

DB 371 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISNLGDIHVSDNLFKI 430

QY 61 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNLLR 120

DB 431 VGCNDTRYGVIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNLLR 490

QY 121 TDKSITQNSFLNINQQRGVYQKP 144

DB 491 TDKSITQNSFLNINQQRGVYQKP 514

RESULT 9

AAE35694

ID AAE35694 standard; protein; 657 AA.

XX AC AAE35694;

XX DT 17-JUN-2003 (first entry)

XX DE BoNT/F-Hc-DipT HN domain-factor Xa linker fusion construct.

XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;

XX infection; Prion disease; Alzheimer' disease; hypersecretion disorder;

XX muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;

XX torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;

XX BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;

XX botulinum type F neurotoxin.

XX OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Unidentified.

OS Chimeric.

XX WO200296467-A2.
 XX OS 05-DEC-2002.
 XX 21-MAY-2002; 2002WO-GB002384.
 XX 24-MAY-2001; 2001GB-00012687.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX Sutton JM, Shone CC;
 XX WPI; 2003-167247/16.
 XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX Example 12; Page 63-65; 130pp; English.
 XX The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer's disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DtpT-HN domain), botulinum type F neurotoxin binding domain
 CC (BONT/F-Hc) from Clostridium botulinum and factor Xa linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX Sequence 657 AA;
 Query Match 100.0%; Score 761; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.4e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
 DB 371 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 430
 QY 61 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
 DB 431 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 490
 QY 121 TDKSITQNSNLFNLNQORGUYQKP 144
 DB 491 TDKSITQNSNLFNLNQORGUYQKP 514
 RESULT 10
 AAE07893
 ID AAE07893 standard; protein; 695 AA.
 XX AC AAE07893;
 XX 01-NOV-2001 (first entry)
 XX Modified clostridial heavy chain-superoxide dismutase conjugate #5.
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;

KW superoxide dismutase; SOD; botulinum neurotoxin type F; BONT/F.
 XX Geobacillus stearothermophilus.
 OS Influenza virus.
 OS Clostridium botulinum.
 OS Synthetic.
 OS Chimeric.
 XX WO200158936-A2.
 XX 16-AUG-2001.
 XX 04-DEC-2000; 2000WO-GB004644.
 XX 02-DEC-1999; 99GB-00028530.
 XX 07-APR-2000; 2000GB-00008658.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX Example 9; Page 43; 50pp; English.
 XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC HC) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
 CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD) from
 CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
 CC translocation peptide from influenza virus and a neuronal cell-specific
 CC binding domain from botulinum neurotoxin type F (BONT/F)
 XX Sequence 685 AA;
 Query Match 100.0%; Score 761; DB 4; Length 685;
 Best Local Similarity 100.0%; Pred. No. 4.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
 DB 399 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 458
 QY 61 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
 DB 459 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 518
 QY 121 TDKSITQNSNLFNLNQORGUYQKP 144
 DB 519 TDKSITQNSNLFNLNQORGUYQKP 542
 RESULT 11
 AAE07890
 ID AAE07890 standard; protein; 862 AA.
 XX AC AAE07890;
 XX

DT 01-NOV-2001 (first entry)
 XX Modified clostridial heavy chain-superoxide dismutase conjugate #2.
 DE
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 XX tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; diphtheria neurotoxin;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 XX Geobacillus stearothermophilus.
 OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Synthetic.
 OS Chimeric.
 XX WO200158936-A2.
 XX
 XX 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 XX
 XX 02-DEC-1999; 99GB-00028530.
 PR 07-APR-2000; 2000GB-00008658.
 XX
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 XX Shone CC, Sutton JM, Silman N;
 FI WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 XX treatment of a CNS disorder comprising a binding domain that translocates
 XX the therapeutic agent into the neuronal cells.
 XX
 XX Example 9; Page 40; 50pp; English.
 XX
 XX The invention relates to a non toxic polypeptide, for delivery of a
 XX therapeutic agent to a neuronal cell, which comprises a binding domain
 XX (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 XX Hc) that binds to the neuronal cell and a translocation domain (amino
 XX terminal half of HC, designated as HN), that translocates the therapeutic
 XX agent into the neuronal cell, where the translocation domain is not a HN
 XX domain of a clostridial neurotoxin and is not a fragment or derivative of
 XX a HN domain of a clostridial toxin. Polypeptides of the invention are
 XX useful for the treatment of a disease state associated with neuronal
 XX cells. The polypeptide constructs are useful for delivering therapeutic
 XX substances to neuronal cells. They are useful to treat disorders of the
 XX CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 XX and infection. They are also useful in gene therapy. The present sequence
 XX is modified clostridial heavy chain-superoxide dismutase conjugate. This
 XX conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
 XX Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
 XX translocation domain from diphtheria neurotoxin and a neuronal cell-
 XX specific binding domain from botulinum neurotoxin type F (BoNT/F)
 XX
 XX Sequence 862 AA;
 SQ
 Query Match 100.0%; Score 761; DB 4; Length 862;
 Best Local Similarity 100.0%; Pred. No. 6.2e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHSDILNLFKI 60
 DB 576 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHSDILNLFKI 635
 QY 61 VGNDRYVGIRYFKYFDTELGTETLYSDPEPSILKDFWGNLYLNKRYLLNLRL 120
 DB 636 VGNDRYVGIRYFKYFDTELGTETLYSDPEPSILKDFWGNLYLNKRYLLNLRL 695
 QY 121 TDKSITQNSNLFNLINQORGVYQKP 144
 DB 696 TDKSITQNSNLFNLINQORGVYQKP 719

RESULT 12

AAE07892
 ID AAE07892 standard; protein; 887 AA.
 XX
 AC AAE07892;
 XX
 DT 01-NOV-2001 (first entry)
 XX
 XX Modified clostridial heavy chain-superoxide dismutase conjugate #4.
 DE
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 XX tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; diphtheria neurotoxin; human;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 XX Homo sapiens.
 OS Geobacillus stearothermophilus.
 OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Synthetic.
 OS Chimeric.
 XX WO200158936-A2.
 XX
 XX 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 XX
 XX 02-DEC-1999; 99GB-00028530.
 PR 07-APR-2000; 2000GB-00008658.
 XX
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 XX Shone CC, Sutton JM, Silman N;
 FI WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 XX treatment of a CNS disorder comprising a binding domain that translocates
 XX the therapeutic agent into the neuronal cells.
 XX
 XX Example 9; Page 42; 50pp; English.
 XX
 XX The invention relates to a non toxic polypeptide, for delivery of a
 XX therapeutic agent to a neuronal cell, which comprises a binding domain
 XX (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 XX Hc) that binds to the neuronal cell and a translocation domain (amino
 XX terminal half of HC, designated as HN), that translocates the therapeutic
 XX agent into the neuronal cell, where the translocation domain is not a HN
 XX domain of a clostridial neurotoxin and is not a fragment or derivative of
 XX a HN domain of a clostridial toxin. Polypeptides of the invention are
 XX useful for the treatment of a disease state associated with neuronal
 XX cells. The polypeptide constructs are useful for delivering therapeutic
 XX substances to neuronal cells. They are useful to treat disorders of the
 XX CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 XX and infection. They are also useful in gene therapy. The present sequence
 XX is modified clostridial heavy chain-superoxide dismutase conjugate. This
 XX conjugate comprises a mitochondrial leader sequence from human Mn-
 XX superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,
 XX linker that can be cleaved by thrombin, translocation domain from
 XX diphtheria neurotoxin and a neuronal cell-specific binding domain from
 XX botulinum neurotoxin type F (BoNT/F)
 XX
 XX Sequence 887 AA;
 SQ
 Query Match 100.0%; Score 761; DB 4; Length 887;
 Best Local Similarity 100.0%; Pred. No. 6.4e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHSDILNLFKI 60
 DB 601 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHSDILNLFKI 660

QY 61 VGCNDRYVGIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLR 120
 DB 661 VGCNDRYVGIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLR 720
 QY 121 TDKSITQNSNFLNINQQRGVYQKP 144
 DB 721 TDKSITQNSNFLNINQQRGVYQKP 744

RESULT 13
 AAE35713
 ID AAE35713 standard; protein; 979 AA.
 AC AAE35713;
 XX
 DT 17-JUN-2003 (first entry)
 XX
 DE BoNT/F-Hc-DiPT HN domain-factor Xa linker-YopT protein fusion construct.

XX Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; DiPT; Hc; binding domain;
 KW botulinum type F neurotoxin; targetted effector protien; YopT.

XX Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Yersinia pestis.
 OS Unidentified.
 OS Chimeric.
 XX
 PN WO200296467-A2.
 XX
 PD 05-DEC-2002.
 XX
 XX 21-MAY-2002; 2002WO-GB002384.
 XX
 XX 24-MAY-2001; 2001GB-00012687.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;
 PI WPI; 2003-167247/16.
 DR
 XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

PS Example 12; Page 110-114; 130pp; English.
 XX
 XX The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DiPT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide and
 CC Yersinia pestis targetted effector protien YopT. This sequence is used in

CC the exemplification of the invention
 XX
 SQ Sequence 979 AA;

Query Match 100.0%; Score 761; DB 6; Length 979;
 Best Local Similarity 100.0%; Pred. No. 7.3e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISINLGDHVSNDNLFKI 60
 DB 693 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISINLGDHVSNDNLFKI 752
 QY 61 VGCNDRYVGIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLR 120
 DB 753 VGCNDRYVGIRYFKVFDTELKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLR 812
 QY 121 TDKSITQNSNFLNINQQRGVYQKP 144
 DB 813 TDKSITQNSNFLNINQQRGVYQKP 836

RESULT 14
 AAE07901
 ID AAE07901 standard; protein; 1032 AA.
 XX
 AC AAE07901;
 XX
 DT 01-NOV-2001 (first entry)
 XX
 DE C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 XX
 KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.

XX Clostridium botulinum.
 XX
 PN WO200158936-A2.
 XX
 PD 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 XX
 XX 02-DEC-1999; 99GB-00028530.
 PR
 PR 07-APR-2000; 2000GB-00008658.
 XX
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.

PS Example 2; Page 48; 50pp; English.
 XX
 XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is C. botulinum C2 enterotoxin translocation domain with botulinum
 CC neurotoxin type F (BoNT/F) binding domain used in the exemplification of

CC the invention
XX
SQ Sequence 1032 AA;
Query Match 100.0%; Score 761; DB 4; Length 1032;
Best Local Similarity 100.0%; Pred. No. 7.8e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSISNLGDIHVSDNLFKI 60
DB 746 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSISNLGDIHVSDNLFKI 805
QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 120
DB 806 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 865
QY 121 TDKSITQNSNLFNINQORGVYQKP 144
DB 866 TDKSITQNSNLFNINQORGVYQKP 889
RESULT 15
AAAY93309
ID AAAY93309 standard; protein; 1059 AA.
XX
AC AAAY93309;
XX
DT 04-SEP-2000 (first entry)
XX
DE A manganese superoxide dismutase (Mn-SOD) construct.
XX
KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
KW neuronal cell targeting component; NCTC; neuronal disease;
KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
KW Huntington's disease; motor neurone disease;
KW botulinum neurotoxin serotype F.
XX
OS Synthetic.
OS Geobacillus stearothermophilus.
OS Clostridium botulinum.
XX
PN WO200028041-A1.
XX
PD 18-MAY-2000.
XX
PF 05-NOV-1999; 99WO-GB003699.
XX
PR 05-NOV-1998; 98GB-00024282.
XX
PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX
PI Shone CC, Sutton JM, Hallis B, Silman N;
XX
DR WPI; 2000-376553/32.
XX
PT Novel composition, comprising superoxide dismutase linked by a cleavable
PT linker to a neuronal cell targeting component useful for delivering
PT superoxide dismutase to neuronal cells to treat ischemia.
XX
PS Disclosure; Page 48-51; 65pp; English.
XX
CC The present sequence represents a construct of the invention, comprising
CC a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
CC be cleaved by thrombin, and a heavy chain derived from botulinum
CC neurotoxin serotype F. The specification describes a composition for
CC delivery of SOD to neuronal cells. The composition comprises SOD linked,
CC by a cleavable linker, to a neuronal cell targeting component (NCTC).
CC This component has a domain that binds to a neuronal cell and a domain
CC that translocates the SOD of the composition into the neuronal cell.
CC After translocation, the linker is cleaved to release the SOD. The
CC composition is useful for treating neuronal diseases caused or augmented
CC by oxidative stress, such as ischemic stroke, trauma, Parkinson's
CC disease, Huntington's disease and motor neurone diseases

XX
SQ Sequence 1059 AA;
Query Match 100.0%; Score 761; DB 3; Length 1059;
Best Local Similarity 100.0%; Pred. No. 8.1e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSISNLGDIHVSDNLFKI 60
DB 773 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSISNLGDIHVSDNLFKI 832
QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 120
DB 833 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 892
QY 121 TDKSITQNSNLFNINQORGVYQKP 144
DB 893 TDKSITQNSNLFNINQORGVYQKP 916
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Job time : 69.993 secs

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:39:17 ; Search time 12.0278 Seconds
(without alignments)
1151.928 Million cell updates/sec

Title: US-08-981-087B-3
Perfect score: 761
Sequence: 1 VFNTQMSISDYINKWIFV.....ITQNSNLFNINQRGVYQKP 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR 80: *
1: pir1: *
2: pir2: *
3: pir3: *
4: pir4: *

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	622	81.7	1268	2 S33411	botulinum neurotox
2	612	80.4	1274	2 I40813	neurotoxin type F
3	497.5	65.4	1252	2 S21178	botulinum neurotox
4	495.5	65.1	1251	2 JH0256	botulinum neurotox
5	440.5	57.9	1296	1 BTCLAB	bontoxilysin (EC 3
6	423.5	55.7	1296	2 I40645	botulinum neurotox
7	296.5	39.0	1297	2 S39791	neurotoxin - Clost
8	296	38.9	1291	2 I40631	non-proteolytic bo
9	284.5	37.4	1291	1 A48940	bontoxilysin (EC 3
10	245.5	32.3	1276	2 S11455	botulinum neurotox
11	240.5	31.6	1315	1 BTCLTN	tentoxilysin (EC 3
12	239	31.4	1291	2 A43777	botulinum neurotox
13	239	31.4	1291	2 S46431	botulinum neurotox
14	225	29.6	1285	2 S70582	botulinum neurotox
15	127	16.7	1162	2 A47708	progenitor toxin n
16	120	15.8	1162	2 I40817	botulinum toxin no
17	117	15.4	1193	2 JCA901	nontoxic-nonhemagg
18	116	15.2	1193	2 S68218	botulinum neurotox
19	114	15.0	1196	2 JQ1467	botulinum neurotox
20	114	15.0	1196	2 S46430	botulinum neurotox
21	105	13.8	1165	2 I40644	botulinum neurotox
22	92.5	12.2	315	2 H84938	flagellar motor sw
23	92	12.1	608	2 T28301	ORF MSV140 hypothe
24	89.5	11.8	460	2 I40799	endo-1,4-beta-gluc
25	89.5	11.8	1487	2 AG2560	hypotheical prote
26	89	11.7	2367	2 S10317	toxin B - Clostrid
27	89	11.7	2367	2 S70172	toxin B - Clostrid
28	86	11.3	2364	2 I40884	cytotoxin L - Clos
29	85	11.2	135	2 B97148	probable esterase

30	85	11.2	528	2 G71643	hypothetical prote
31	84.5	11.1	1024	1 RNZQBF	DNA-directed RNA p
32	84	11.0	667	1 E64240	hypothetical prote
33	84	11.0	3973	2 B71612	hypothetical prote
34	83.5	11.0	223	2 T46018	hypothetical prote
35	83.5	11.0	2013	2 C71610	probable membrane
36	83	10.9	611	2 A33827	regulatory protein
37	83	10.9	3119	2 T18414	protein g377 - mal
38	82.5	10.8	490	2 H70103	hypothetical prote
39	81.5	10.7	387	2 G84946	carbamoyl-phosphat
40	81.5	10.7	450	2 JC1299	endo-beta-1,4-gluc
41	81	10.6	474	2 B84617	hypothetical prote
42	80	10.5	258	2 G90110	26S proteasome reg
43	80	10.5	499	2 G82923	multiple banded an
44	80	10.5	535	2 T19051	hypothetical prote
45	80	10.5	889	2 A35679	rep protein - slim

ALIGNMENTS

RESULT 1

S33411 botulinum neurotoxin type F - Clostridium barati

C:Species: Clostridium barati

C:Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004

C:Accession: S33411; S31860

R:Thompson, D.E.; Hutton, R.A.; East, A.K.; Allaway, D.; Collins, M.D.; Richardson, P.T.

FEMS Microbiol. Lett. 108, 175-182, 1993

A:Title: Nucleotide sequence of the gene coding for Clostridium barati type F neurotoxin

A:Reference number: S33411; MUID:93252228; PMID:8486245

A:Accession: S33411

A:Status: preliminary

A:Molecule type: DNA

A:Residues: 1-1268 <THO>

A:Cross-references: UNIPROT:Q45851; UNIPARC:UPI000000BAF8C; EMBL:X68262; NID:G49138; PIDN

C:Superfamily: tetanus toxin

C:Keywords: neurotoxin

Query Match 81.7%; Score 622; DB 2; Length 1268;

Best Local Similarity 79.0%; Pred. No. 3.3e-48;

Matches 113; Conservative 16; Mismatches 14; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIINLGDIHVSDNILEFKI 60

Db 983 VFNTQMDISDYINKWFTVTITNNRLGHSKLYINGNLTDQKSIINLGNHVDNILEFKI 1042

Qy 61 VGCNDRYVGIRYKVFDTLTKTEITLYSDEPDPSILKDFWGNLYLYNKRYLLNLR 120

Db 1043 VGCNDRYVGIRYKFIENMELDKTEITLYHSEPDSTILKDFWGNLYLYNKRYLLNLR 1102

Qy 121 TDKSIITQNSFLNINQRGVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

RESULT 2

I40813 botulinum neurotoxin type F - Clostridium botulinum

C:Species: Clostridium botulinum

C:Date: 16-Aug-1996 #sequence_revision 16-Aug-1996 #text_change 09-Jul-2004

C:Accession: I40813; S48108

R:East, A.K.; Richardson, P.T.; Allaway, D.; Collins, M.D.; Roberts, T.A.; Thompson, D.F.

FEMS Microbiol. Lett. 96, 225-230, 1992

A:Title: Sequence of the gene encoding type F neurotoxin of Clostridium botulinum.

A:Reference number: I40644

A:Accession: I40813

A:Status: preliminary; translated from GB/EMBL/DBJ

A:Molecule type: DNA

A:Residues: 1-1274 <RES>

A:Cross-references: UNIPROT:P30996; UNIPARC:UPI0000126B8A; GB:M92906; NID:G144866; PIDN

R:Campbell, K.D.; Collins, M.D.; East, A.K.

J. Clin. Microbiol. 31, 2255-2262, 1993

A:Cross-references: UNIPARC:UPI0000173650
A:Accession: S08562
A:Molecule type: protein
A:Residues: 442-463, R', 465-467 <DA2>
A:Cross-references: UNIPARC:UPI0000173650
R:Schmidt, J.J.; Sathyamoorthy, V.; DasGupta, B.R.
Arch. Biochem. Biophys. 238, 544-548, 1985
A:Title: Partial amino acid sequences of botulinum neurotoxins types B and E.
A:Reference number: S07128; MUID:85197963; PMID:3898113
A:Accession: S07128
A:Status: preliminary
A:Molecule type: protein
A:Residues: 2-16 <SCH1>
A:Cross-references: UNIPARC:UPI0000173652
A:Accession: S08573
A:Status: preliminary
A:Molecule type: protein
A:Residues: 2-17 <SCH2>
A:Cross-references: UNIPARC:UPI0000173652
A:Accession: S08574
A:Status: preliminary
A:Molecule type: protein
A:Residues: 442-459 <SCH3>
A:Cross-references: UNIPARC:UPI0000173652
R:Schiaivo, G.; Benfenati, F.; Poullain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A:Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A:Reference number: S27125; MUID:93063293; PMID:1331807
A:Contents: annotation
A:Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap
C:Genetics:
A:Gene: bont/b
C:Function:
A:Description: catalyzes hydrolysis of a Gln-Phe peptide bond in synaptobrevin 2
C:Superfamily: tetanus toxin
C:Keywords: metalloproteinase; neurotoxin; transmembrane protein; zinc
F:2-441/Product: botoxilysin B light chain #status experimental <LGHT>
F:442-1391/Product: botoxilysin B heavy chain #status experimental <HVY>
F:230,234/Binding site: zinc (His) #status predicted
F:231/Active site: Glu #status predicted

Query Match 37.4%; Score 284.5; DB 1; Length 1291;
Best Local Similarity 39.3%; Pred. No. 1.2e-17;
Matches 59; Conservative 27; Mismatches 45; Indels 19; Gaps 4;
QY 2 FNYTOMISIDYINKWIFVFTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDNLFKIV 61
DB 987 FEYNIREDISYINRWFFVTITNN-LNNAKIYINGKLESNTDIDKIREVIANGIEIIFKLD 1045
QY 62 GCND-TRVGRYKFKVDFTELKTEIETLYSDPDSILKDFWGNLYLNKRYLLNLL-- 118
DB 1046 GDIDRTQIFWKKYFIFNTELSQSIERYKIQSYSEYKLPKDFWGNPLMYNKRYEYMFNAGN 1105
QY 119 -----LRTDKSI-----TONSNFLN 133
DB 1106 KNSYIKLKQDSPVGEILTRSKYNQNSKYN 1135

RESULT 10
S11455
botulinum neurotoxin type D - Clostridium botulinum
C:Species: Clostridium botulinum
C:Date: 18-Feb-1994 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C:Accession: S11455
R:Binz, T.; Kurazono, H.; Popoff, M.R.; Eklund, M.W.; Sakaguchi, G.; Kozaki, S.; Kriegl
Nucleic Acids Res. 18, 5556, 1990
A:Title: Nucleotide sequence of the gene encoding Clostridium botulinum neurotoxin type
A:Reference number: S11455; MUID:91016853; PMID:2216736
A:Accession: S11455
A:Status: preliminary
A:Molecule type: protein
A:Residues: 1-1276 <BIN>
A:Cross-references: UNIPROT:P19321; UNIPARC:UPI0000126B83; EMBL:X54254; NID:G40395; PIDN

C:Superfamily: tetanus toxin
C:Keywords: neurotoxin

Query Match 32.3%; Score 245.5; DB 2; Length 1276;
Best Local Similarity 35.0%; Pred. No. 4.2e-14;
Matches 48; Conservative 33; Mismatches 55; Indels 1; Gaps 1;
QY 1 VFNYTOMISIDYINKWIFVFTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDNLFKIV 60
DB 986 IFDYSLSHTGYTNKWFVFTITNNINGMKLYINGELKQSKIEDLDEKLDKTIYVFI 1045
QY 61 -VGCNTRYGVIRYKFKVDFTELKTEIETLYSDPDSILKDFWGNLYLNKRYLLNLL 119
DB 1046 DENIDENQMLWIRDNFISKELSNEDINIVYEGILNRVINDYGNPLKFDTEYIIINDN 1105
QY 120 RTDKSIITQNSNLFNLNQ 136
DB 1106 YIDRYIAPESNVLVLVQ 1122

RESULT 11

BTCLTN
tentoxilysin (EC 3.4.24.68) precursor - Clostridium tetani
N:Alternate names: tetanus neurotoxin
C:Species: Clostridium tetani
C:Date: 31-Mar-1988 #sequence_revision 31-Mar-1988 #text_change 09-Jul-2004
C:Accession: A25689; A25757; A25194; B25194; A60759; S69348; S09364
R:Eisel, U.; Jarausch, W.; Goretzki, K.; Henschen, A.; Engels, J.; Weller, U.; Hudel, M.
EMBO J. 5, 2495-2502, 1986
A:Title: Tetanus toxin: primary structure, expression in E. coli, and homology with botu
A:Reference number: A25689; MUID:87053814; PMID:3536478
A:Accession: A25689
A:Molecule type: DNA
A:Residues: 1-1315 <EIS>
A:Cross-references: UNIPROT:P04958; UNIPARC:UPI000003617E; GB:X04436; NID:G40769; PIDN:
R:Fairweather, N.F.; Lyness, V.A.
Nucleic Acids Res. 14, 7809-7812, 1986
A:Title: The complete nucleotide sequence of tetanus toxin.
A:Reference number: A25757; MUID:87040747; PMID:3774547
A:Accession: A25757
A:Molecule type: DNA
A:Residues: 1-1315 <FAI>
A:Cross-references: UNIPARC:UPI000003617E; GB:X06214; NID:G40773; PIDN:CAA29564.1; PID:
A:Experimental source: strain CN3911
R:Fairweather, N.F.; Lyness, V.A.; Pickard, D.J.; Allen, G.; Thomson, R.O.
J. Bacteriol. 165, 21-27, 1986
A:Title: Cloning, nucleotide sequencing, and expression of tetanus toxin fragment C in E
A:Reference number: A25194; MUID:86085672; PMID:3510187
A:Accession: A25194
A:Molecule type: DNA
A:Residues: 743-1315 <FA2>
A:Cross-references: UNIPARC:UPI0000156CFA; GB:M12739; NID:G144920; PIDN:AAA23282.1; PID
A:Accession: B25194
A:Molecule type: protein
A:Residues: 865-894 <FA3>
A:Cross-references: UNIPARC:UPI000017364D
R:Matsuda, M.; Lei, D.L.; Sugimoto, N.; Ozutsumi, K.; Okabe, T.
Infect. Immun. 57, 3588-3593, 1989
A:Title: Isolation, purification, and characterization of fragment B, the NH-2-terminal
A:Reference number: A60759; MUID:90035436; PMID:2478476
A:Accession: A60759
A:Molecule type: protein
A:Residues: 461-475 <WAT>
A:Cross-references: UNIPARC:UPI000017364E
R:Demetz, S.; Lanzavecchia, L.; Eisel, U.; Niemann, H.; Widmann, C.; Corradin, G.
J. Immunol. 142, 394-402, 1989
A:Title: Delineation of several DR-restricted tetanus toxin T cell epitopes.
A:Reference number: JS0098; MUID:89093918; PMID:2463305
A:Contents: annotation; epitope region
R:Schiaivo, G.; Benfenati, F.; Poullain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.
Nature 359, 832-835, 1992
A:Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteoly
A:Reference number: S27125; MUID:93063293; PMID:1331807

A;Contents: annotation
R/de Filippis, V.; Vangelista, L.; Schiavo, G.; Tonello, F.; Montecucco, C.
Eur. J. Biochem. 229, 61-69, 1995

A;Title: Structural studies on the zinc-endopeptidase light chain of tetanus neurotoxin.

A;Reference number: S69348; MUID:95262688; PMID:774050

A;Accession: S69348

A;Molecule type: protein

A;Residues: 2-31 <DEP>

A/Cross-references: UNIPARC:UPI000017364F

C;Comment: The source of this protein was an extrachromosomal plasmid.

C;Comment: The precursor of this protein has proteolytic cleavage sites at both ends forming two chains of different molecular weights. The amino end of the heavy chain forms ion channels while the carboxy terminal part binds to peripheral neuronal synapses, inhibiting neurotransmitter release by proteolytic cleavage of synaptic vesicles.

C;Comment: Fragment B forms ion channels in a lipid bilayer. Fragment C binds to ganglionic presynaptic neurons. It inhibits neurotransmitter release by proteolytic cleavage of synaptic vesicles.

C;Function:

A;Description: blocks neuroexocytosis via hydrolysis of a Glu-Phe peptide bond in synaptobrevin.

C;Superfamily: tetanus toxin

K;Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc

F;/2-/457/Product: tetroxylalysine light chain (fragment A) #status predicted <TTL>
F;/461-1315/Product: tetroxylalysin heavy chain (fragment B.C) #status experimental <TTH>
F;/461-.864/Domain: channel forming (fragment B) #status predicted <TXB>
F;/865-1315/Domain: glycoside binding (fragment C) #status predicted <TXC>
F;/233_237/Binding site: zinc (His) #status predicted
F;/334/Active site: Glu #status predicted

Query Match	31.6%;	Score	240.5;	DB	1;	Length	1315;
Best Local Similarity	42.0%;	Pred. No.	1.2e-13;				
Matches	47;	Conservative	22;	Mismatches	42;	Indels	1; Gaps 1;
QY	15	NKWIFVTTNNPLGNSRIYINGNLINDEXSISNLDGIHVSDNLFKIVGC-NDTRYVGIRY	73				
	:	:	:	:	:	:	:
Db	1029	NKWVFITTTNDRLSSANLYINGVLMSGABIITGLGAIRDENNITKLDCRNNNQIVSDK	1088				
	:	:	:	:	:	:	:
QY	74	KFVDETELGKTEIETLSDPEPSPILDKPWGNLYLLYNRYILLNLRDTKSI	125				
	:	:	:	:	:	:	:
Db	1089	FRIFCKALNPKEIEKLYLSYSITFLRFQWGNFLRYDTEYLIPVASSKDVI	1140				
	:	:	:	:	:	:	:

RESULT 12
A49777
Clostridium botulinum neurotoxin type C1 precursor - Clostridium botulinum (type C, strain c-st)
Accession: F01687 Species: Clostridium botulinum
Date: 10-Mar-1994 #sequence revision 07-Apr-1994 #text change 09-Jul-2004
S11291; A35396; S22166; A49777
Eklund, M.W.; Kurazono, H.; Binz, T.; Niemann, H.; Gill, D.M.; Boquet, P.;
R.Hausser, D.; Eklund, M.W.; Kurazono, H.; Binz, T.; Niemann, H.; Gill, D.M.; Boquet, P.;
Nucleic Acids Res. 18, 4524, 1990
A.Title: Nucleotide sequence of Clostridium botulinum C1 neurotoxin.
A.Reference number: S11291; PMID:90370487; PMID:2204031

Accession: S1251
A:Status: preliminary
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-84, 'P', 86-1291 <HAU>
Cross-references: UNIPROT:Q93HT3; UNIPARC:UPI000016D75D; EMBL:X53751; NID:gl4905; PIDN
K.; Murakami, T.; Indoh, T.; Yokosawa, N.; Takeshi, K.
Biochem. Biophys. Res. Commun. 171, 1304-1311, 1990
Title: The complete nucleotide sequence of the gene coding for botulinum type C-1 toxin
Reference number: A3596; MUID:91024998; PMID:2222445
Accession: A3596
A:Status: preliminary; not compared with conceptual translation
A:Molecule type: DNA
A:Residues: 1-669, 'R', 671-1291 <TS1>
Cross-references: UNIPARC:UPI0000176709
Submitted to the EMBL Data Library, December 1991
Description: Nucleotide sequence of the gene for one of the components of hemagglutinin
Reference number: S22163

Accession: S22163
Accession: S22166
Status: preliminary
Molecule type: DNA
Residues: 1-1291 <TS2>
Cross-references: UNIPARC:UPI000003F60; EMBL:X62389; NID:G558175; PIDN:CAA44263.1; PT
Tsuzuki, K.; Kimura, K.; Fujii, N.; Murakami, T.; Indo, T.; Yokosawa, N.; Oguma, K.

Appl. Environ. Microbiol. 57, 1168-1172, 1991
A: Title: Cloning of the structural gene for Clostridium botulinum type C-1 toxin and
A: Reference number: A49777; PMID: 91282468; PMID: 2059039
A: Accession: A49777
A: Status: preliminary
A: Molecule type: DNA
A: Residues: 1-607 <73>
A: Cross-references: UNIPARC:UPI000017670A; GB:D90210
C: Superfamily: tetanus toxin
C: Keywords: neurotoxin

Query Match	31.4%	Score 239;	DB 2;	Length 1291;
Best Local Similarity	37.0%;	Pred. No. 1.7e-13;		
Matches	54;	Conservative 25;	Mismatches 57;	Indels 10; Gaps 2;
QY	2	FNYTQMLISDYINKWIFVTITNRLGNSRIYINGNLIDKESISNGDIHVSDNILFKIV	61	
Db	993	FSYDLSNNAPGY-NKWFVFVTVTNNMGNMKIYINGKLI DTIKVKELTGINFSKTITFEIN	1051	
QY	62	GCMDTRYV-----GIRYFKVPDTLKGKTEIETLYSDEPDPSLTKDPFGWNYLLYNKE	112	
Db	1052	KIPDTGLITSDSDNINMWIRDFYIFAKELDGDHINILFNSLQYTNVVKDQWGNDRYNKE	1111	
QY	113	YLLNLRLRTDKITQNSFNLTINQOR	138	
Db	1112	YTVVNIDYLNRYMYANSRQIVENTER	1137	

RESULT 13

S46431
botulinum neurotoxin C1 - Clostridium botulinum phage 1C (strain C 468)
N|Alternate names: BoNT/C1 protein
C|Species: Clostridium botulinum phage 1C
A|Variety: strain C 468
C|Date: 19-Mar-1997 #sequence_revision 06-Jun-1997 #text_change 09-Jul-1997
C|Accession: S46431; S49107
R|Hauser, D.; Eklund, M.W.; Boquet, P.; Popoff, M.R.
Mol. Gen. Genet. 243, 631-640, 1994
A|Title: Organization of the botulinum neurotoxin C1 gene and its associated
A|Reference number: S46426; MUID:94301293; PMID:8028579
C|Accession: S46431
A|Status: nucleic acid sequence not shown; translation not shown
A|Molecule type: DNA
A|Residues: 1-1291 <HAU>
A|Cross-references: UNIPROT:Q93HT3; UNIPARC:UPI00000B3F60; EMBL:X72793;
A|Experimental source: strain C 468
A|Note: the nucleotide sequence was submitted to the EMBL Data Library,
C|superfamily: tetanus toxin

```

Query Match      31.4%; Score 239; DB 2; Length 1291;
Best Local Similarity 37.0%; Pred. No. 1.7e-13;
Matches 54; Conservative 25; Mismatches 57; Indels 10; Gaps 2;

      QY      2 ENYQMSISDIYINKWIFVTITNNRLNSRIYINGNLIDEKSIHGVSDNILEFKIV 61
      :|:      :|:      :|:      :|:      :|:      :|:      :|:      :|:
      ddb      993 PSYDISNAPGY-KNKFPFVTNNMGMNKIYINGKLIDTIKVKELGTINFSKTIITEIN 1051

      QY      62 GCNDRTRY-----GIRYKFVDFTELGTETLETYSDEPDPISLKDFGNVLLYNKR 112
      :|:      :|:      :|:      :|:      :|:      :|:      :|:      :|:
      db      1052 KIPTDGLTSDSDINMWIRDFIFAKELDGKINILFNSLQYTNVVKDYWGNDLRYNKE 1111

      QY      113 YYLNLRTKSTQTSNLFNLINQOR 138
      :|:      :|:      :|:      :|:      :|:      :|:      :|:
      db      1112 YYMWIDYLNRYMANSRQVFVFTNR 1137

```

RESULT 14

Accession: S70582
 Clostridium botulinum type D precursor - Clostridium botulinum phase d-sA
 Species: Clostridium botulinum phase d-sA
 Note: host Clostridium botulinum type D (strain South Africa)
 Date: 19-Mar-1997 #sequence_revision 19-Mar-1997 #text_change 20-Jun-2000
 Accession: S70582

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DB 1112 TDKSITQNSFLNINQQRGVYQPK 1135

|||||

RESULT 2
Q9ZAJ5 CLOBO
ID Q9ZAJ5 CLOBO PRELIMINARY; PRT; 1280 AA.
AC Q9ZAJ5;
DT 01-MAY-1999 (TrEMBLrel. 10, Created)
DT 01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Bont protein.
GN Name=bont;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN NUCLEOTIDE SEQUENCE.
RP STRAIN=CDC 3281;
RC MEDLINE=98440323; PubMed=9767710; DOI=10.1007/s002849900384;
RA Santos-Buelga J., Collins M.D., East A.K.;
RX Santos-Buelga J., Collins M.D., East A.K.;
RT "Characterization of the genes encoding the Botulinum neurotoxin complex in a strain of clostridium botulinum producing type B & F neurotoxins.";
RL Curr. Microbiol. 37:312-318(1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RA Santos-Buelga J.A.;
RL Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; Y13631; CAA73972.1; -, Genomic DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002;
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metallopeptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
SQ SEQUENCE 1280 AA; 147486 MW; D0F748976BEC222C CRC64;

Query Match 83.0%; Score 632; DB 2; Length 1280;
Best Local Similarity 85.0%; Pred. No. 6.7e-49;
Matches 119; Conservative 9; Mismatches 12; Indels 0; Gaps 0;

Qy 1 VFNYTQMISDYINKWIFVTITNNRGLNSRIYINGNLIDEKTSINLGDIHVSDNILFKI 60
Db 995 IFRYEBLAGISDYINKWIFVTITNNRGLNSRIYINGNLIDEKTSINLGDIHVSDNILFKI 1054

Qy 61 VGCNDTRVVGIRYKFVDTELGTETLYSDPEPSILKDFGNGYLLNKRYLLNLLR 120
Db 1055 VGCDDETGYGIRYKFVNFELOKTEIETLYSNEDPPSIKDFGNGYLLNKRYLLNLLR 1114

Qy 121 TDKSITQNSFLNINQQRGV 140
Db 1115 KDKYTNSGILNINQQRGV 1134

RESULT 3
Q45851_9CLOT
ID Q45851_9CLOT PRELIMINARY; PRT; 1268 AA.
AC Q45851;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Neurotoxin.type F.
GN Name=bont /f;
RN NUCLEOTIDE SEQUENCE OF 1-64.

OS Clostridium baratii.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1561;
RN NUCLEOTIDE SEQUENCE.
RP MEDLINE=93252228; PubMed=8486245; DOI=10.1016/0378-1097(93)90581-L;
RA Thompson D.E., Hutson R.A., East A.K., Allaway D., Collins M.D.,
RX Richardson P.T.;
RT "Nucleotide sequence of the gene coding for Clostridium baratii type F neurotoxin: comparison with other clostridial neurotoxins.";
RL FEMS Microbiol. Lett. 108:175-182(1993).
DR EMBL; X68262; CAA48329.1; -, Genomic DNA.
DR PIR; S33411; S33411.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -;
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metallopeptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
KM Neurotoxin.
SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15ED2 CRC64;

Query Match 81.7%; Score 622; DB 2; Length 1268;
Best Local Similarity 79.0%; Pred. No. 5.5e-48;
Matches 113; Conservative 16; Mismatches 14; Indels 0; Gaps 0;

Qy 1 VFNYTQMISDYINKWIFVTITNNRGLNSRIYINGNLIDEKTSINLGDIHVSDNILFKI 60
Db 983 VFNYTQMISDYINKWIFVTITNNRGLSHKLYINGNLTDQKSILNIGNHVDDNILFKI 1042

Qy 61 VGCNDTRVVGIRYKFVDTELGTETLYSDPEPSILKDFGNGYLLNKRYLLNLLR 120
Db 1043 VGCNDTRVVGIRYKFIFNWELDKTEIETLYHSEDPSTILKDFGNGYLLNKRYLLNLLK 1102

Qy 121 TDKSITQNSFLNINQQRGVYQK 143
Db 1103 PNMSVTQNSDILNINRQGIYSK 1125

RESULT 4
BXF_CLOBO
ID BXF_CLOBO STANDARD; PRT; 1274 AA.
AC P30996;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type F precursor (EC 3.4.24.69) (BONT/F)
DE (Bontoxilysin F) [Contains: Botulinum neurotoxin F light chain;
DE Botulinum neurotoxin F heavy chain].
GN Name=botF;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN NUCLEOTIDE SEQUENCE.
RP STRAIN=Type F / ATCC 23387;
RC MEDLINE=93012902; PubMed=1398040; DOI=10.1016/0378-1097(92)90408-G;
RX East A.K., Richardson P.T., Allaway D., Collins M.D., Roberts T.A.,
RA Thompson D.E.;
RT "Sequence of the gene encoding type F neurotoxin of Clostridium botulinum.";
RL FEMS Microbiol. Lett. 75:225-230(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-64.

DB 1112 TDKSITQNSFLNINQQRGVYQPK 1135

|||||

RESULT 2

Q92AJ5 CLOBO
ID Q92AJ5 CLOBO PRELIMINARY; PRT; 1280 AA.
AC Q92AJ5;
DT 01-MAY-1999 (TrEMBLrel. 10, Created)
DT 01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Bont protein.
GN Name=bont;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN NUCLEOTIDE SEQUENCE.
[1]
RP STRAIN=CDC 3281;
RC MEDLINE=98440323; PubMed=9767710; DOI=10.1007/s002849900384;
RA Santos-Buelga J., Collins M.D., East A.K.;
RX Santos-Buelga J., Collins M.D., East A.K.;
RT "Characterization of the genes encoding the Botulinum neurotoxin complex in a strain of clostridium botulinum producing type B & F neurotoxins.";
RL Curr. Microbiol. 37:312-318(1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RA Santos-Buelga J.A.;
RL Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; Y13631; CAA73972.1; -, Genomic DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002;
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metallopeptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
SQ SEQUENCE 1280 AA; 147486 MW; D0F748976BEC222C CRC64;

Query Match 83.0%; Score 632; DB 2; Length 1280;
Best Local Similarity 85.0%; Pred. No. 6.7e-49;
Matches 119; Conservative 9; Mismatches 12; Indels 0; Gaps 0;

Qy 1 VFNYTQMISDYINKWIFVTITNNRGLNSRIYINGNLIDEKTSINLGDIHVSDNILFKI 60
Db 995 IFRYEBLAGISDYINKWIFVTITNNRGLNSRIYINGNLIDEKTSINLGDIHVSDNILFKI 1054

Qy 61 VGCNDTRVVGIRYKFVDTELGTETLYSDPEPSILKDFGNGYLLNKRYLLNLLR 120
Db 1055 VGCDDETGYGIRYKFVNFELOKTEIETLYSNEDPPSIKDFGNGYLLNKRYLLNLLR 1114

Qy 121 TDKSITQNSFLNINQQRGV 140
Db 1115 KDKYTNSGILNINQQRGV 1134

RESULT 3

Q45851_9CLOT
ID Q45851_9CLOT PRELIMINARY; PRT; 1268 AA.
AC Q45851;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Neurotoxin.type F.
GN Name=bont /f;
OS Clostridium baratii.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1561;
RN NUCLEOTIDE SEQUENCE.
[1]
RP MEDLINE=93252228; PubMed=8486245; DOI=10.1016/0378-1097(93)90581-L;
RA Thompson D.E., Hutson R.A., East A.K., Allaway D., Collins M.D.,
RX Richardson P.T.;
RT "Nucleotide sequence of the gene coding for Clostridium baratii type F neurotoxin: comparison with other clostridial neurotoxins.";
RL FEBS Microbiol. Lett. 108:175-182(1993).
DR EMBL; X68262; CAA48329.1; -, Genomic DNA.
DR PIR; S33411; S33411.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -;
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metallopeptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15ED2 CRC64;

Query Match 81.7%; Score 622; DB 2; Length 1268;
Best Local Similarity 79.0%; Pred. No. 5.5e-48;
Matches 113; Conservative 16; Mismatches 14; Indels 0; Gaps 0;

Qy 1 VFNYTQMISDYINKWIFVTITNNRGLNSRIYINGNLIDEKTSINLGDIHVSDNILFKI 60
Db 983 VFNYTQMISDYINKWIFVTITNNRGLSHKLYINGNLTDQKSILNIGNHVDDNILFKI 1042

Qy 61 VGCNDTRVVGIRYKFVDTELGTETLYSDPEPSILKDFGNGYLLNKRYLLNLLR 120
Db 1043 VGCNDTRVVGIRYKFIFNWELDKTEIETLYHSEDPSTLKDFGNGYLLNKRYLLNLLK 1102

Qy 121 TDKSITQNSFLNINQQRGVYQK 143
Db 1103 PNMSVTQNSDILNINRQGIYSK 1125

RESULT 4

BXF CLOBO
ID BXF CLOBO STANDARD; PRT; 1274 AA.
AC P30996;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type F precursor (EC 3.4.24.69) (BONT/F)
DE (Bontoxilysin F) [Contains: Botulinum neurotoxin F light chain;
DE Botulinum neurotoxin F heavy chain].
GN Name=botf;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN NUCLEOTIDE SEQUENCE.
[1]
RP STRAIN=Type F / ATCC 23387;
RC MEDLINE=93012902; PubMed=1398040; DOI=10.1016/0378-1097(92)90408-G;
RX East A.K., Richardson P.T., Allaway D., Collins M.D., Roberts T.A.,
RA Thompson D.E.;
RT "Sequence of the gene encoding type F neurotoxin of Clostridium botulinum.";
RL FEBS Microbiol. Lett. 75:225-230(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-64.

RC STRAIN=Type F / Hobbs FT10;
RX MEDLINE=94297488; PubMed=7764998;
RA East A.K., Collins M.D.;
RT "Conserved structure of genes encoding components of botulinum
RT neurotoxin complex M and the sequence of the gene coding for the
RT nontoxic component in nonproteolytic Clostridium botulinum type F.";
RL Curr. Microbiol. 29:69-77(1994).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 634-1002.
RX MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D., Collins M.D., East A.K.;
RT "Gene probes for identification of the botulinum neurotoxin gene and
RT specific identification of neurotoxin types B, E, and F.";
RL J. Clin. Microbiol. 31:2255-2262(1993).
RN [4]
RP IDENTIFICATION OF SUBSTRATES.
RX MEDLINE=94230352; PubMed=8175689;
RA Yamasaki S., Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
RA Roques B., Fykse E.M., Suedhof T.C., Jahn R., Niemann H.;
RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
RT botulinum neurotoxins and tetanus toxin.";
RL J. Biol. Chem. 269:12764-12772(1994).
CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase that catalyzes the hydrolysis of the S8-Gln-Lys-59
CC bond of synaptobrevins-1 and -2.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC
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CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.

DR EMBL; M92306; AAA23263.1; -; Genomic DNA.
DR EMBL; S73676; AAC60475.1; -; Genomic DNA.
DR EMBL; X70820; CAA50151.1; -; Genomic DNA.
DR EMBL; X70816; CAA50147.1; -; Genomic DNA.
DR PIR; I40813; I40813.
DR PIR; S48109; S48109.
DR HSSP; Q45894; LEIH.
DR MEROPS; M27.002; -;
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin recpt_bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin R bind N; 1.
DR Pfam; PF07952; Toxin trans; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Hydrolase; Metal-binding; Metalloprotease; Neurotoxin; Protease;
KW Toxin; Transmembrane; Zinc.
FT CHAIN 1 436 Botulinum neurotoxin F light chain.
FT CHAIN 437 1274 Botulinum neurotoxin F heavy chain.
FT ACT SITE 228 228 By similarity.
FT METAL 227 227 Zinc (catalytic) (By similarity).

FT METAL 231 231 Zinc (catalytic) (By similarity).
FT DISULFID 429 445 Interchain (between light and heavy
FT chains) (Probable).
SQ SEQUENCE 1274 AA; 146710 MW; 5B99756A7438B921 CRC64;
Query Match 80.4%; Score 612; DB 1; Length 1274;
Best Local Similarity 82.9%; Pred. No. 4.5e-47;
Matches 116; Conservative 10; Mismatches 14; Indels 0; Gaps 0;
Qy 1 VENTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDKESISNIGDIHVSNDILFKI 60
Db 994 IFRYEELNRLSNVINKWIFVTITNNRLGNSRIYINGNLIVKESISNIGDIHVSNDILFKI 1053
Qy 61 VGCNDTRYGVIRYFKVFDTELGKTEIETLSDEPDPSILKDFWGNLYLLYNNRYLLNLR 120
Db 1054 VGCDDETVGVIRYFKVFDTELGKTEIETLSDEPDPSILKDFWGNLYLLYNNRYLLNLR 1113
Qy 121 TDKSITQNSNPLINQORGV 140
Db 1114 KDKYITLNSGILINQORGV 1133

RESULT 5
EXE_CLOBO
ID BXE CLOBO STANDARD; PRT; 1250 AA.
AC Q00496; Q45862;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BONT/E)
DE (Bontokylisin E) [Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain].
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN NUCLEOTIDE SEQUENCE.
RC STRAIN=Type E / Beluga;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulinum neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=92174922; PubMed=1541280;
RA Whelan S.M., Elmore M.J., Bodsworth N.J., Atkinson T., Minton N.P.;
RT "The complete amino acid sequence of the Clostridium botulinum type-E
RT neurotoxin, derived by nucleotide-sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 204:657-667(1992).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158(1990).
RN [4]
RP PROTEIN SEQUENCE OF 1-13.
RX MEDLINE=85197963; PubMed=3888113;
RA Schmidt J.J., Sathyaamoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequences of botulinum neurotoxins types B and
RT E.";
RL Arch. Biochem. Biophys. 238:544-548(1985).
RN [5]
RP PROTEIN SEQUENCE OF 419-426.
RX MEDLINE=90344918; PubMed=2116911; DOI=10.1016/0300-9084(90)90075-R;
RA Gimenez J.A., Dasgupta B.R.;
RT "Botulinum neurotoxin type E fragmented with endoprotease Lys-C
RT reveals the site trypsin nicks and homology with tetanus neurotoxin.";
RN [6]

RL Biochimie 72:213-217(1990).
 RN [6]
 RP NUCLEOTIDE SEQUENCE OF 615-981.
 RC STRAIN=Type E / Hazen 36208;
 RA MEDLINE=94013372; PubMed=8408542;
 RX Campbell K.D., Collins M.D., East A.K.,
 RA "Gene probes for identification of the botulinum neurotoxin gene and
 RT specific identification of neurotoxin types B, E, and F.";
 RL J. Clin. Microbiol. 31:2255-2262(1993).
 RN [7]
 RP IDENTIFICATION OF SUBSTRATE.
 RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
 RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
 RA Benfante F., Wilson M.C., Montecucco C.,
 RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
 RL COOH-terminal peptide bonds.";
 RL FEBS Lett. 335:99-103(1993).
 RN [8]
 RP IDENTIFICATION OF SUBSTRATE.
 RX MEDLINE=94124495; PubMed=8294407;
 RA Binz T., Blas J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
 RA Jahn R., Niemann H.,
 RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
 RL J. Biol. Chem. 269:1617-1620(1994).
 CC -I- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
 CC release. It binds to peripheral neuronal synapses, is internalized
 CC and moves by retrograde transport up the axon into the spinal cord
 CC where it can move between postsynaptic and presynaptic neurons. It
 CC inhibits neurotransmitter release by acting as a zinc
 CC endopeptidase that catalyzes the hydrolysis of the 180-Arg-Ile-
 CC 181 bond in SNAP-25.
 CC -I- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -I- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
 CC -I- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H). The light chain has the pharmacological activity,
 CC while the N- and C-terminal of the heavy chain mediate channel
 CC formation and toxin binding, respectively.
 CC -I- SUBCELLULAR LOCATION: Secreted.
 CC -I- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -I- SIMILARITY: Belongs to the peptidase M27 family.
 CC
 CC -----
 CC This Swiss-Prot entry is copyright: It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.
 CC -----
 CC EMBL; X62089; CAA43999.1; -; Genomic DNA.
 CC EMBL; X62683; CAA44558.1; -; Genomic DNA.
 CC EMBL; X70815; CAA50146.1; -; Genomic DNA.
 CC PIR; S08575; S08575.
 CC PIR; S21178; S21178.
 CC PDB; 1T3A; X-ray; A/B=1-421.
 CC PDB; 1T3C; X-ray; A/B=1-421.
 CC MEROPS; M27.002; -.
 CC InterPro; IPR011591; Botulinum.
 CC InterPro; IPR006025; Pept_M_Zn_BS.
 CC InterPro; IPR000395; Peptidase_M27.
 CC InterPro; IPR012928; Toxin_recept_bd_N.
 CC InterPro; IPR012500; Toxin_trans.
 CC Pfam; PF01742; Peptidase_M27; 1.
 CC Pfam; PF07953; Toxin_R_bind_N; 1.
 CC Pfam; PF07952; Toxin_trans; 1.
 CC PRINTS; PR00760; BONTOLYISIN.
 CC PRODOM; PD001963; Botulinum; 1.
 CC PROSITE; PS00142; ZINC_PROTEASE; 1.
 CC 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
 CC Metalloprotease; Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
 CC INIT MET 0 421 Botulinum neurotoxin E light chain.
 CC CHAIN 1 421

FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
 FT ACT_SITE 212 212 By similarity.
 FT METAL 211 211 Zinc (catalytic) (By similarity).
 FT METAL 215 215 Zinc (catalytic) (By similarity).
 FT DISULFID 411 425 Interchain (between light and heavy chains) (Probable).
 FT CONFLICT 176 176 R -> G (in Ref. 2).
 FT CONFLICT 197 197 C -> S (in Ref. 2 and 3).
 FT CONFLICT 339 339 R -> A (in Ref. 2).
 FT CONFLICT 772 772 I -> L (in Ref. 2 and 6).
 FT CONFLICT 962 963 FE -> LQ (in Ref. 2 and 6).
 FT CONFLICT 966 966 R -> A (in Ref. 2 and 6).
 FT CONFLICT 1194 1194 N -> NN (in Ref. 2).
 FT CONFLICT 1250 AA; 143713 MW; D9FCF26DDA041EB4 CRC64;
 SQ SEQUENCE 1250 AA; 143713 MW; D9FCF26DDA041EB4 CRC64;
 Query Match 65.4%; Score 497.5; DB 1; Length 1250;
 Best Local Similarity 68.1%; Pred. No. 1.4e-36;
 Matches 94; Conservative 21; Mismatches 22; Indels 1; Gaps 1;
 QY 2 FNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDKSI:SNLGDHVSNDILPKIV 61
 DB 974 FNYGNANGISDYINKWIFVTITNNRLGNSRIYINGNLIDKSI:SNLGDHVSNDILPKIV 1033
 QY 62 GCNDTRYVGIRYKVFDTLGTKEITETLYSDEPDPSILKDFWGNLYLLKRYLLNLLRT 121
 DB 1034 NCSYTRYGIRYKVFDTLGTKEITETLYSDEPDPSILKDFWGNLYLLKRYLLNLLRT 1093
 QY 122 DKSI-TQNSNPLNINQOR 138
 DB 1094 NNFIDRRKSTLSINNIR 1111
 RESULT 6
 Q54A79 CLOBO PRELIMINARY; PRT; 1252 AA.
 AC Q54A79;
 DT 13-SEP-2005 (T-EMBLrel. 31, Created)
 DT 13-SEP-2005 (T-EMBLrel. 31, Last sequence update)
 DT 13-SEP-2005 (T-EMBLrel. 31, Last annotation update)
 DE Botulinum neurotoxin type E.
 GN Namesbont/E;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=35396;
 RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
 RA Nakamura S., Karasawa T., Kozaki S.,
 RT "Sequence of the botulinum neurotoxin type E.";
 RL Submitted (MAR-2002) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AB082519; BAB86845.1; -; Genomic_DNA.
 KW Neurotoxin.
 SQ SEQUENCE 1252 AA; 143637 MW; 76401D4D2E95D7A2 CRC64;
 Query Match 65.4%; Score 497.5; DB 2; Length 1252;
 Best Local Similarity 68.1%; Pred. No. 1.4e-36;
 Matches 94; Conservative 21; Mismatches 22; Indels 1; Gaps 1;
 QY 2 FNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDKSI:SNLGDHVSNDILPKIV 61
 DB 975 FNYGNANGISDYINKWIFVTITNNRLGNSRIYINGNLIDKSI:SNLGDHVSNDILPKIV 1034
 QY 62 GCNDTRYVGIRYKVFDTLGTKEITETLYSDEPDPSILKDFWGNLYLLKRYLLNLLRT 121
 DB 1035 NCSYTRYGIRYKVFDTLGTKEITETLYSDEPDPSILKDFWGNLYLLKRYLLNLLRT 1094
 QY 122 DKSI-TQNSNPLNINQOR 138
 DB 1095 NNFIDRRKSTLSINNIR 1112

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RESULT 7
BXE_CLOBU
ID -BXE_CLOBU STANDARD; PRT; 1250 AA.
AC P30995;
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BONT/E)
DE Botulinum neurotoxin E (Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain)
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=ATCC 43181, and ATCC 43755;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulinum neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium botulinum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RC STRAIN=BL6340;
RX MEDLINE=91237316; PubMed=203376;
RA Fujii N., Kimura K., Murakami T., Indoh T., Tsuzuki K., Yokosawa N.,
RA Yashiki T., Oguma K.;
RT "Cloning of a DNA fragment encoding the 5'-terminus of the botulinum
RT type E toxin gene from Clostridium botulinum strain BL6340.";
RL J. Gen. Microbiol. 137:519-525(1991).
RN [3]
RP PROTEIN SEQUENCE OF 1-48.
RC STRAIN=5262;
RA Gineez J., Roley J., Dasgupta B.R.;
RT "Neurotoxin type E from Clostridium botulinum and C. butyricum;
RT partial sequence and comparison.";
RL FASEB J. 2:A1750-A1750(1988).
CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC
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CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC
CC EMBL; X62088; CAA33998.1; -; Genomic DNA.
CC EMBL; X53180; CAA37321.1; -; Genomic DNA.
CC FIR; JH0256; JH0256.
CC HSSP; Q45894; 1E1H.
CC SMR; P30995; 1-411.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR006025; Pept_M_Zn_BS.
CC InterPro; IPR000395; Peptidase_M27.

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DR InterPro; IPR012928; Toxin_recept_bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase_M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PD00760; BONTOKILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Direct protein sequencing; Hydrolase; Metal-binding; Metalloprotease;
KW Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
FT INIT_MET 0
FT CHAIN 1 421 Botulinum neurotoxin E light chain.
FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
FT ACT_SITE 212 212 By similarity.
FT METAL 211 211 Zinc (catalytic) (By similarity).
FT METAL 215 215 Zinc (catalytic) (By similarity).
FT DISULFID 411 425 Interchain (between light and heavy
FT CONFLICT 229 229 Chains) (Probable).
FT SEQUENCE 1250 AA; 143266 MW; 8171B5B2C2312857 CRC64;
SQ
Query Match 65.1%; Score 495.5; DB 1; Length 1250;
Best Local Similarity 67.4%; Pred.No. 2.1e-36;
Matches 93; Conservative 23; Mismatches 21; Indels 1; Gaps 1;
QY 2 FNYTQMISIDYINKWIFVTITNNRNGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKIV 61
DB 974 FNYGANGISDYINKWIFVTITNDRLGSKLYINGNLIDKKSILNLGNIHVSDNLFKIV 1033
QY 62 GCDNTRYVGIRYKVFDTGLKTEIETLYSDPPSILKDFWGNLYLKNKYLLNLRRT 121
DB 1034 NCSYTRYIGIRYFNFDKELDETEIQTLYNNEPNANILKDFWGNLYLKYLLNLRKP 1093
QY 122 DKSITQNS-NFLNINQOR 138
DB 1094 NNFNRRTDSTLSINNIR 1111
RESULT 8
Q8KZM3_CLOBU.
ID Q8KZM3_CLOBU PRELIMINARY; PRT; 1252 AA.
AC Q8KZM3;
DT 01-OCT-2002 (TrEMBLrel. 22, Created)
DT 01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Type E botulinum toxin.
GN Name=Bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 5262;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RA Nakamura S., Katasawa T., Kozaki S.;
RL Submitted (JUL-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB088207; BAC05434.1; -; Genomic DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q8KZM3; 2-412.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR00395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1252 AA; 143510 MW; 41B633BE744D3B41 CRC64;
SQ

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RESULT 10
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ID Q9K395_CLOBU PRELIMINARY; PRT; 1251 AA.
AC Q9K395;
DT 01-OCT-2000 (TREMBlrel. 15, Created)
DT 01-OCT-2000 (TREMBlrel. 15, Last sequence update)
DT 01-FEB-2005 (TREMBlrel. 29, Last annotation update)
DE Type E botulinum toxin.
GN Name=bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.

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RX MEDLINE=20509829; PubMed=11055954;
 RX DOI=10.1128/AEM.66.11.4992-4997.2000;
 RA Wang X., Maegawa T., Karasawa T., Tsukamoto K., Gyobu Y.,
 RA Yamakawa K., Oguma K., Sakauchi Y., Nakamura S.;
 RT "Genetic analysis of type E botulinum toxin-producing Clostridium
 butyricum strains.";
 RL Appl. Environ. Microbiol. 66:4992-4997 (2000) .
 DR EMBL; AB037714; BAB03522.1; -; Genomic_DNA.
 DR EMBL; AB037704; BAB03512.1; -; Genomic_DNA.
 DR EMBL; AB037705; BAB03513.1; -; Genomic_DNA.
 DR EMBL; AB037706; BAB03514.1; -; Genomic_DNA.
 DR EMBL; AB037710; BAB03518.1; -; Genomic_DNA.
 DR EMBL; AB037712; BAB03520.1; -; Genomic_DNA.
 DR EMBL; AB037713; BAB03521.1; -; Genomic_DNA.
 DR EMBL; AB037711; BAB03519.1; -; Genomic_DNA.
 DR EMBL; AB037709; BAB03517.1; -; Genomic_DNA.
 DR EMBL; AB037708; BAB03516.1; -; Genomic_DNA.
 DR EMBL; AB037707; BAB03515.1; -; Genomic_DNA.
 DR HSP; Q45894; IE1H.
 DR SRR; Q9K395; 2-412.
 DR GO; GO:000833; F:peptidase activity; IEA.
 DR GO; GO:0009405; P:pathogenesis; IEA.
 DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
 DR InterPro; IPR011591; Botulinum.
 DR InterPro; IPR006025; Pept_M_Zn_BS.
 DR InterPro; IPR000395; Peptidase_M27.
 DR InterPro; IPR012928; Toxin_recept_bd_N.
 DR InterPro; IPR012500; Toxin_trans.
 DR Pfam; PF01742; Peptidase_M27; 1.
 DR Pfam; PF07953; Toxin_R_bind_N; 1.
 DR Pfam; PF07952; Toxin_trans; 1.
 DR PRINTS; PR00760; BONTOKILYSIN.
 DR ProDom; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
 SQ SEQUENCE 1251 AA; 143752 MW; 2021FA427070296 CRC64;

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QY	61	VGCNDTYVGIREFKVPFDLGLKTEIETLYSDPDPISILKDFWGNVLLYNKRYVLLN	LLR	120
Db	1034	VNCSTYRIYGIREFNIFPKDLDETEIQTLYSNPENTNIIKDFWGNVLLYDKGYVLLN	VLK	1093
QY	121	TDKSI-TONGNFLNINQOR	138	
Db	1094	PNNFIDRRKOSTISINNIR	1112	

RESULT 11

AC P10845; P01561; P18639;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BONT/A)
DE (Bontoxigen A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain]
GN Name: botA; Synonyms: atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / NCTC 2916;
RX MEDLINE=90235864; PubMed=2185020;
RA Thompson D.E., Brehm J.K., Oultram J.D., Swinfield T.-J., Shone C.C., Atkinson T., Melling J., Minton N.P.;
RT "The complete amino acid sequence of the Clostridium botulinum type A neurotoxin, deduced by nucleotide sequence analysis of the encoding gene.";
RT Eur. J. Biochem. 189:73-81(1990).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / 62A;
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison with other clostridial neurotoxins.";
RT J. Biol. Chem. 265:9153-9158(1990).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / 62A;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding components of the botulinum toxin complex in proteolytic Clostridium botulinum types A, B, and F: evidence of chimeric sequences in the gene encoding the nontoxic nonhemagglutinin component.";
RT Int. J. Syst. Bacteriol. 46:1105-1112(1996).
RN [4]
RP NUCLEOTIDE SEQUENCE OF 1-34.
RC STRAIN=Type A / Hall;
RX MEDLINE=89350959; PubMed=2669749;
RA Betley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of the N-terminal encoding region.";
RT Biochem. Biophys. Res. Commun. 162:1388-1395(1989).
RN [5]
RP NUCLEOTIDE SEQUENCE OF 1-18.
RC STRAIN=Type A / NIH;
RX MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RA Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RT "Molecular characterization of two forms of nontoxic-nonhemagglutinin components of Clostridium botulinum type A progenitor toxins.";
RT FEBS Lett. 376:41-44(1995).
RN [6]
RP PROTEIN SEQUENCE OF 1-16.
RX MEDLINE=84178501; PubMed=6370252;
RA Schmidt J.J., Sartymoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequence of the heavy and light chains of botulinum neurotoxin type A.";
RT Biochem. Biophys. Res. Commun. 119:900-904(1984).
RN [7]
RP PROTEIN SEQUENCE OF 1-46.
RA Dasgupta B.R., Foley J., Niece R.;
RT "Partial sequence of the light chain of botulinum neurotoxin type A.";
RT Biochemistry 26:4162-4162(1987).
RN [8]
RP PROTEIN SEQUENCE OF 1-5 AND 444-456.
RX MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RA Dasgupta B.R., Dekleva M.L.;
RT "Botulinum neurotoxin type A: sequence of amino acids at the N-

terminus and around the nicking site.";
RL Biochimie 72:661-664(1990).
RN [9]
RP PROTEIN SEQUENCE OF 448-474 AND 872-895.
RX MEDLINE=89024662; PubMed=3178218;
RA Sathymoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RT "Botulinum neurotoxin type A: Cleavage of the heavy chain into two halves and their partial sequences.";
RL Arch. Biochem. Biophys. 266:142-151(1988).
RN [10]
RP PROTEIN SEQUENCE OF 448-482.
RX MEDLINE=85285016; PubMed=3896784;
RA Shone C.C., Hambleton P., Melling J.;
RT "Inactivation of Clostridium botulinum type A neurotoxin by trypsin and purification of two tryptic fragments. Proteolytic action near the COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RL Eur. J. Biochem. 151:75-82(1985).
RN [11]
RP PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
RX Gimenez J.A., Dasgupta B.R.;
RT "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72, 45, 42, and 18 kD fragments.";
RL J. Protein Chem. 12:351-363(1993).
RN [12]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J., Benfenati F., Wilson M.C., Montecucco C.;
RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct COOH-terminal peptide bonds.";
RL FEBS Lett. 335:99-103(1993).
RN [13]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94124495; PubMed=8294407;
RA Binz T., Blas J., Yamasaki S., Baumeister A., Link E., Suedhof T.C., Jahn R., Niemann H.;
RT "Proteolysis of SNAP-25 by types E and A botulin neurotoxins.";
RL J. Biol. Chem. 269:1617-1620(1994).
RN [14]
RP MUTAGENESIS OF GLU-261; PHE-265 AND TYR-365.
RX MEDLINE=21556941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
RA Rigoni M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;
RT "Site-directed mutagenesis identifies active-site residues of the light chain of botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 288:1231-1237(2001).
RN [15]
RP X-RAY CRYSTALLOGRAPHY (3.3 ANGSTROMS).
RX MEDLINE=98455071; PubMed=9783750;
RA Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
RT "Crystal structure of botulinum neurotoxin type A and implications for toxicity.";
RL Nat. Struct. Biol. 5:898-902(1998).
RN [16]
RP FUNCTION: Inhibits acetylcholine release. The botulinum toxin binds with high affinity to peripheral neuronal presynaptic membrane, is then internalized by receptor-mediated endocytosis. The C-terminus of the heavy chain (H) is responsible for the adherence of the toxin to the cell surface while the N-terminus mediates transport of the light chain from the endocytic vesicle to the cytosol. After translocation, the light chain (L) hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking neurotransmitter release. Inhibition of acetylcholine release results in flaccid paralysis, with frequent heart or respiratory failure.
RN [17]
RP CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No detected action on small molecule substrates.
RN [18]
RP COPACITOR: Binds 1 zinc ion per subunit.
RN [19]
RP SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a heavy chain (H).
RN [20]
RP SUBCELLULAR LOCATION: Secreted.
RN [21]
RP PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the treatment of strabismus and blepharospasm associated with dystonia

[2]
 RN NUCLEOTIDE SEQUENCE OF 1-65.
 RC STRAIN=Type A / Kyoto-F;
 RX MEDLINE=97016817; PubMed=8863443;
 RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
 RT "Organization and phylogenetic interrelationships of genes encoding
 RT components of the botulinum toxin complex in proteolytic Clostridium
 RT botulinum types A, B, and F: evidence of chimeric sequences in the
 RT gene encoding the nontoxic nonhemagglutinin component.";
 RL int. J. Syst. Bacteriol. 46:1105-1112(1996).
 CC -1- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
 CC binds with high affinity to peripheral neuronal presynaptic
 CC membrane, is then internalized by receptor-mediated endocytosis.
 CC The C-terminus of the heavy chain (H) is responsible for the
 CC adherence of the toxin to the cell surface while the N-terminus
 CC mediates transport of the light chain from the endocytic vesicle
 CC to the cytosol. After translocation, the light chain (L)
 CC hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking
 CC neurotransmitter release. Inhibition of acetylcholine release
 CC results in flaccid paralysis, with frequent heart or respiratory
 CC failure (By similarity).
 CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H) (By similarity).
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -1- SIMILARITY: Belongs to the peptidase M27 family.
 CC -----
 CC This Swiss-Prot entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.
 CC -----
 DR EMBL; X73423; CAA51824.1; -; Genomic_DNA.
 DR EMBL; X87974; CAA61234.1; -; Genomic_DNA.
 DR PIR; I40645; I40645.
 DR PDB; 1ELH; X-ray; A/C=9-249, B/D=250-415.
 DR MEROPS; M27.002; -.
 DR InterPro; IPR011591; Botulinum.
 DR InterPro; IPR006025; Pept_M_Zn_BS.
 DR InterPro; IPR000395; Peptidase M27.
 DR InterPro; IPR012928; Toxin recpt_bd_N.
 DR InterPro; IPR012500; Toxin trans.
 DR Pfam; PF01742; Peptidase M27; 1.
 DR Pfam; PF07953; Toxin_R_bind_N; 1.
 DR Pfam; PF07952; Toxin trans; 1.
 DR PRINTS; PR00760; BONTOMILYSIN.
 DR PRODOM; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; FALSE NEG.
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 KW Protease; Toxin; Transmembrane; Zinc.
 FT INIT MET 0 0 By similarity.
 FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
 FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
 FT TRANSMEM 626 646 Potential.
 FT TRANSMEM 655 675 Potential.
 FT ACT_SITE 223 223 By similarity.
 FT METAL 222 222 Zinc (catalytic) (By similarity).
 FT METAL 226 226 Zinc (catalytic) (By similarity).
 FT DISULFID 429 453 Interchain (between light and heavy
 FT chains) (By similarity).
 FT DISULFID 1234 1279 By similarity.
 FT SEQUENCE 1295 AA; 149280 MW; 5DA04A13D98D6372 CRC64;
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Db 997 VFYKQWVNISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 1056
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 DT 10-MAY-2005 (TrEMBLrel. 30, Created)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last sequence update)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last annotation update)
 DE Type A2 botulinum neurotoxin.
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RC NUCLEOTIDE SEQUENCE.
 RP STRAIN=FRI-HIA2;
 RA Johnson E.A., Tepp W.H., Bradshaw M., Gilbert R.J., Cook P.E.,
 RA McIntosh E.D.G.;
 RT "Characterization of Clostridium botulinum strains associated with an
 RT Infant Botulism Case in the United Kingdom.";
 RL J. Clin. Microbiol. 0:0-0(2005).
 RN [2]
 RC NUCLEOTIDE SEQUENCE.
 RP STRAIN=FRI-HIA2;
 RA Smith T.J., Lou J., Geren I., Forsyth C., Tsai R., Tepp W.H.,
 RA Bradshaw M., Johnson E.A., Smith L.A., Marks J.D.;
 RT "Sequence variation within botulinum neurotoxin serotypes impacts
 RT antibody binding and neutralization.";
 RL Submitted (MAR-2005) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AY953275; AAX53156.1; -; Genomic_DNA.
 KW Neurotoxin.
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 Db 1118 DPNKYVDVN---NIGIRGYMYLK 1137
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 AC Q9X708;
 DT 01-NOV-1999 (TrEMBLrel. 12, Created)
 DT 01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
 DT 01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
 DE Botulinum neurotoxin type B (Fragment).
 GN Name=boNT/B;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.

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OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=9343691; PubMed=10413679;
RA Lalli G., Herreros J., Osborne S.L., Montecucco C., Rossetto O.,
RA Schiavo G.;
RT "Functional characterisation of tetanus and botulinum neurotoxins
RT binding domains.";
RL J. Cell Sci 112:2715-2724(1999).
DR EMBL; AJ242628; CAB43706.1; -; Genomic_DNA.
DR HSSP; P10844; IEPW.
DR SMR; Q9X708; 1-441.
DR GO; GO:0009405; P:pathogenesis; IEA.
KW Neurotoxin.
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Matches 63; Conservative 30; Mismatches 43; Indels 22; Gaps 5;

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Db 145 FEYSIREDISDYINRWPFVITNNS-DNAKIYINGKLESNIDIKDIGEVIANGEIIFKLD 203

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Job time : 73.8376 secs

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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:46:47 ; Search time 17.7077 Seconds
(without alignments)
672.325 Million cell updates/sec

Title: US-08-981-087B-3
Perfect score: 761
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Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 572060 seqs, 82675679 residues

Total number of hits satisfying chosen parameters: 572060

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued Patents AA:*
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3: /cgn2_6/ptodata/1/iaa/H COMB pep:*
4: /cgn2_6/ptodata/1/iaa/PCRTUS COMB pep:*
5: /cgn2_6/ptodata/1/iaa/RE COMB pep:*
6: /cgn2_6/ptodata/1/iaa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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1	440.5	57.9	382	2	US-09-288-326A-9
2	440.5	57.9	382	1	US-09-548-409B-9
3	440.5	57.9	438	1	US-08-480-604A-23
4	440.5	57.9	438	1	US-08-405-496A-23
5	440.5	57.9	438	2	US-08-915-136-23
6	440.5	57.9	438	2	US-09-084-517-23
7	440.5	57.9	462	1	US-08-480-604A-26
8	440.5	57.9	462	1	US-08-405-496A-26
9	440.5	57.9	462	2	US-08-915-136-26
10	440.5	57.9	462	2	US-09-084-517-26
11	440.5	57.9	1296	1	US-08-480-604A-28
12	440.5	57.9	1296	1	US-08-405-496A-28
13	440.5	57.9	1296	2	US-08-915-136-28
14	440.5	57.9	1296	2	US-09-084-517-28
15	423.5	55.7	848	2	US-10-360-101-219
16	284.5	37.4	1169	2	US-09-255-829-20
17	284.5	37.4	1290	2	US-10-360-101-220
18	240.5	31.6	452	1	US-07-618-312A-2
19	240.5	31.6	452	1	US-07-618-312A-4
20	240.5	31.6	452	1	US-08-280-228-2
21	240.5	31.6	452	1	US-08-280-228-4
22	240.5	31.6	618	1	US-08-668-381A-5
23	240.5	31.6	853	2	US-08-913-880C-17
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26	240.5	31.6	862	2	US-08-913-880C-14
27	240.5	31.6	865	2	US-08-913-880C-13

28	240.5	31.6	866	2	US-08-913-880C-12	Sequence 12, Appl
29	240.5	31.6	874	2	US-08-913-880C-11	Sequence 11, Appl
30	240.5	31.6	875	2	US-08-913-880C-10	Sequence 10, Appl
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33	91.5	12.0	366	2	US-09-248-796A-14679	Sequence 14679, A
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41	84	11.0	392	6	5196304-2	Patent No. 5196304
42	80	10.5	887	1	US-07-867-106-3	Sequence 3, Appli
43	78.5	10.3	900	1	US-08-630-822A-62	Sequence 62, Appl
44	78.5	10.3	900	1	US-09-005-069-62	Sequence 62, Appl
45	78.5	10.3	900	2	US-09-171-156A-21	Sequence 21, Appl

ALIGNMENTS

RESULT 1
US-09-288-326A-9
; Sequence 9, Application US/09288326A
; Patent No. 6776990
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitits
; FILE REFERENCE: 17282
; CURRENT APPLICATION NUMBER: US/09/288,326A
; CURRENT FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 15
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 9
; LENGTH: 382
; TYPE: PRT
; ORGANISM: Clostridium Botulinum
US-09-288-326A-9

Query Match	57.9%	Score	440.5	DB 2	Length	382			
Best Local Similarity	57.6%	Pred. No.	2.4e-42						
Matches	83	Conservative	26	Mismatches	30	Indels	5	Gaps	2
Qy	1	VFNVTOMISDISYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDHVSNDILFKI	60						
Db	84	VFKYSQMINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKIPISNLGNHASNIMFKL	143						
Qy	61	VGCNDT-RYVGIRPKVPDTLTKTEITLVSDEPDPSILKDFWGNVLLYLNKRYVLLNLL	119						
Db	144	DGCRDTHRYIWKYFNLPDLKEIKEIKDYLDNQNSGILKDFWGDYLOYDKPYVYMLNLY	203						
Qy	120	RTDKSITQNS-----NFLNINQORG	139						
Db	204	DPNKYDVNNVGIRGYMYLKGPRG	227						

RESULT 2
US-09-548-409B-9
; Sequence 9, Application US/09548409B
; Patent No. 6843998
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitits
; FILE REFERENCE: 17282CIP(AP)
; CURRENT APPLICATION NUMBER: US/09/548,409B

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; CURRENT FILING DATE: 2000-04-13
; PRIOR APPLICATION NUMBER: US 09/288,326
; PRIOR FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 12
; SOFTWARE: FastSeq for Windows Version 3.0
; SEQ ID NO 9
; LENGTH: 382
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-09-348-409B-9

Query Match          57.9%; Score 440.5; DB 2; Length 382;
Best Local Similarity 57.6%; Pred. No. 2.4e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNYTQMISIDYINKWIFVTTNNRLNGRIYINGNLIDEKISINLGDHVSNDILFKI 60
Db 84 VFYQSMINISDYINRWIFVTTNNRLNNSKIYINGRLIDQKPIISNLGNHASNNIMFKL 143
Qy 61 VGCNDT-RYVGIRYKVFDETLGKTEIETLYSDPDSILKDFMGVYLLNKKRYLLNLL 119
Db 144 DGCGRDTHRIYIWKYFNLFDKELNEKEIKDLYDNQNSGILKDFWGDYLYQDKPYMLNLY 203
Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db 204 DPNKYVDVNVNGIRGYMLKGRG 227

RESULT 3
US-08-480-604A-23
; Sequence 23, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSHUA R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.

; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: Protein
US-08-480-604A-23

Query Match          57.9%; Score 440.5; DB 1; Length 438;
Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNYTQMISIDYINKWIFVTTNNRLNGRIYINGNLIDEKISINLGDHVSNDILFKI 60
Db 140 VFYQSMINISDYINRWIFVTTNNRLNNSKIYINGRLIDQKPIISNLGNHASNNIMFKL 199
Qy 61 VGCNDT-RYVGIRYKVFDETLGKTEIETLYSDPDSILKDFMGVYLLNKKRYLLNLL 119
Db 200 DGCGRDTHRIYIWKYFNLFDKELNEKEIKDLYDNQNSGILKDFWGDYLYQDKPYMLNLY 259
Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db 260 DPNKYVDVNVNGIRGYMLKGRG 283

RESULT 4
US-08-405-496A-23
; Sequence 23, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; TITLE OF INVENTION: NEUROTOXIN
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
```

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; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-405-496A-23

Query Match 57.9%; Score 440.5; DB 1; Length 438;
Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNTQMISIDYKINKWIFVTITNNRLNSKIYINGNLIDKSIKSLGDIHVSNDILPKI 60
Db 140 VFKYSQMINISDIYNNRWFVTITNNRLNSKIYINGNLIDKSIKSLGDIHVSNDILPKI 199

Qy 61 VGCNDT-RYVGIRYKVFDTGLKTELETYSDEPDPSILKDFWGNLYLLKRYLLNLL 119
Db 200 DGCRRTHRYIWKYFNLFDEKELNEKEIKLDYDQNSGILKDFWGDYLYQDKPYTMLNLY 259

Qy 120 RTDKSITONS----NFLNINQORG 139
Db 260 DPNKYVDVNNVGIRGYMLKGPGR 283

RESULT 5
US-08-915-136-23
; Sequence 23, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321

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; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-915-136-23

Query Match 57.9%; Score 440.5; DB 2; Length 438;
Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNTQMISIDYKINKWIFVTITNNRLNSKIYINGNLIDKSIKSLGDIHVSNDILPKI 60
Db 140 VFKYSQMINISDIYNNRWFVTITNNRLNSKIYINGNLIDKSIKSLGDIHVSNDILPKI 199

Qy 61 VGCNDT-RYVGIRYKVFDTGLKTELETYSDEPDPSILKDFWGNLYLLKRYLLNLL 119
Db 200 DGCRRTHRYIWKYFNLFDEKELNEKEIKLDYDQNSGILKDFWGDYLYQDKPYTMLNLY 259

Qy 120 RTDKSITONS----NFLNINQORG 139
Db 260 DPNKYVDVNNVGIRGYMLKGPGR 283

RESULT 6
US-09-084-517-23
; Sequence 23, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/084,517
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321

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; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-084-517-23

Query Match 57.9%; Score 440.5; DB 2; Length 438;
Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNYTQMSISDYINKWIFVTITNNRLNRSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 140 VFKYSQMINISDYINRWIFVTITNNRLNRSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 199
Qy 61 VGCNDT-RYGVIRYKVFDTLGTETIETLYSDPDPISILKDFWGNVLLNRYLLNLL 119
Db 200 DGCRTTHRYIWKYFNLFDKELNEKEIKDLYDNQSGILKDFWGDYLYQDKPYMLNLY 259
Qy 120 RTDKSITQNS-----NFLNINQQRG 139
Db 260 DPNKYVDVNVNGIRGYMLKGRG 283

RESULT 7
US-08-480-604A-26
; Sequence 26, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHVE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
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; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-480-604A-26

Query Match 57.9%; Score 440.5; DB 1; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNYTQMSISDYINKWIFVTITNNRLNRSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 164 VFKYSQMINISDYINRWIFVTITNNRLNRSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 223
Qy 61 VGCNDT-RYGVIRYKVFDTLGTETIETLYSDPDPISILKDFWGNVLLNRYLLNLL 119
Db 224 DGCRTTHRYIWKYFNLFDKELNEKEIKDLYDNQSGILKDFWGDYLYQDKPYMLNLY 283
Qy 120 RTDKSITQNS-----NFLNINQQRG 139
Db 284 DPNKYVDVNVNGIRGYMLKGRG 307

RESULT 8
US-08-405-496A-26
; Sequence 26, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
```


PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-26

Query Match 57.9%; Score 440.5; DB 1; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISIDYINKWIFVTITNNRLNRSRIYINGNLIDKSIISNLGDIHVSDNIIPLKI 60
Db 164 VFYQSQMINISDYNRWIFVTITNNRLNRSRIYINGNLIDKSIISNLGDIHVSDNIIPLKI 223

Qy 61 VGCNDT-RYVGIRYKVFDTTELGTETIETLYSDPDPSPILKDFWGNLYLLNRYLLMLL 119
Db 224 DGCRTTHRYIWKYFNLFKELNEKEIKLDYDQNSGILKDFWGDYLYQDKPYMLNLY 283

Qy 120 RTDKSITONS-----NFLNINQORG 139
Db 284 DPNKYVDVNVGIRGYMYLKGPRG 307

RESULT 9
US-08-915-136-26
Sequence 26, Application US/08915136
Patent No. 6290960
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
CORRESPONDENCE ADDRESS: 32
NUMBER OF SEQUENCES: 32
ADDRESS: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-26

Query Match 57.9%; Score 440.5; DB 2; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISIDYINKWIFVTITNNRLNRSRIYINGNLIDKSIISNLGDIHVSDNIIPLKI 60
Db 164 VFYQSQMINISDYNRWIFVTITNNRLNRSRIYINGNLIDKSIISNLGDIHVSDNIIPLKI 223

Qy 61 VGCNDT-RYVGIRYKVFDTTELGTETIETLYSDPDPSPILKDFWGNLYLLNRYLLMLL 119
Db 224 DGCRTTHRYIWKYFNLFKELNEKEIKLDYDQNSGILKDFWGDYLYQDKPYMLNLY 283

Qy 120 RTDKSITONS-----NFLNINQORG 139
Db 284 DPNKYVDVNVGIRGYMYLKGPRG 307

RESULT 10
US-09-084-517-26
Sequence 26, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
CORRESPONDENCE ADDRESS: 30
NUMBER OF SEQUENCES: 30
ADDRESS: HAVERTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995

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; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; TYPE: amino acid
; LENGTH: 462 amino acids
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-084-517-26

Query Match 57.9%; Score 440.5; DB 2; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNTQMISISDYINKWIFVTITNNLGNRIYINGNLIDEKSIISNLGDIHVSDNILEFKI 60
Db 164 VFKYSQMINISDYINRWIFVTITNNLNNKIYINGRLIDQKPIISNLGNIHASNNIMFKL 223
QY 61 VGCNDT-RYVGIRYFKVDTGLKTEITLYSDPDPISILKDFWGNLYLNKRYVLLNLL 119
Db 224 DGCRTDTHRIYIKYFNLFKELNEKEIKDLYDNQNSGILKDFWGDVLYQDKPYMLNLY 283
QY 120 RTDKSITONS----NFLNINQORG 139
Db 284 DPNKYVDVNNVGIRGYMLKGPGRG 307

RESULT 11
US-08-480-604A-28
; Sequence 28, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424

; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-480-604A-28

Query Match 57.9%; Score 440.5; DB 1; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNTQMISISDYINKWIFVTITNNLGNRIYINGNLIDEKSIISNLGDIHVSDNILEFKI 60
Db 998 VFKYSQMINISDYINRWIFVTITNNLNNKIYINGRLIDQKPIISNLGNIHASNNIMFKL 1057
QY 61 VGCNDT-RYVGIRYFKVDTGLKTEITLYSDPDPISILKDFWGNLYLNKRYVLLNLL 119
Db 1058 DGCRTDTHRIYIKYFNLFKELNEKEIKDLYDNQNSGILKDFWGDVLYQDKPYMLNLY 1117
QY 120 RTDKSITONS----NFLNINQORG 139
Db 1118 DPNKYVDVNNVGIRGYMLKGPGRG 1141

RESULT 12
US-08-405-496A-28
; Sequence 28, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
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; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-405-496A-28

Query Match 57.9%; Score 440.5; DB 1; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTOMISIDYINKWIFVTITNNRLNSRIYINGNLIDKSIISNLGDIHVSNDILFKI 60
DB 998 VFKYSQMINISDYINRWIFVTITNNRLNSKIYINGRLIDQKPSNLGNHASNIMFKL 1057
QY 61 VGCNDT-RYVGIRYKVFDELTGKTEIETLYSDPDPSILKDFWGNLYLNKRYLLNL 119
DB 1058 DGCRTTHYIWKYFNLFDELKEIKDLYDNQNSGILKDFWGDYLDYDKPYTMYLNL 1117
QY 120 RTDKSITONS-----NFLNINQORG 139
DB 1118 DPNKYVDVNVGIRGYMYLKGPRG 1141

RESULT 13
US-08-915-136-28
; Sequence 28, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136

; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-915-136-28

Query Match 57.9%; Score 440.5; DB 2; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTOMISIDYINKWIFVTITNNRLNSRIYINGNLIDKSIISNLGDIHVSNDILFKI 60
DB 998 VFKYSQMINISDYINRWIFVTITNNRLNSKIYINGRLIDQKPSNLGNHASNIMFKL 1057
QY 61 VGCNDT-RYVGIRYKVFDELTGKTEIETLYSDPDPSILKDFWGNLYLNKRYLLNL 119
DB 1058 DGCRTTHYIWKYFNLFDELKEIKDLYDNQNSGILKDFWGDYLDYDKPYTMYLNL 1117
QY 120 RTDKSITONS-----NFLNINQORG 139
DB 1118 DPNKYVDVNVGIRGYMYLKGPRG 1141

RESULT 14
US-08-915-136-28
; Sequence 28, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: PC-DOS/MS-DOS
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: PC-DOS/MS-DOS
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; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/084,517
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-084-517-28

Query Match 57.9%; Score 440.5; DB 2; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db 998 VFKYSQMINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKPTISNLGNIHASNNIMFKL 1057

Qy 61 VGCNDT-RYVGIRYKVFDTGLGKTEIETLYSDPPSILKDFWGNVLLYNKRYLLNLL 119
Db 1058 DGCRTTHRYIKWIFNFDKELNEKEIKOLYDQNSGILKDFWGDYLYQDKPYMLNLY 1117

Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db 1118 DPNKYVDVNNVGRGYMLKGRG 1141

RESULT 15
US-10-360-101-219
; Sequence 219, Application US/10360101
; Patent No. 6861236
; GENERAL INFORMATION:
; APPLICANT: Moll, Gert N.
; APPLICANT: Leenhouts, Cornelis J.
; TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
; FILE REFERENCE: 2183-5673
; CURRENT APPLICATION NUMBER: US/10/360,101
; CURRENT FILING DATE: 2003-02-07
; PRIOR APPLICATION NUMBER: EP 02077060.8
; PRIOR FILING DATE: 2002-05-24
; NUMBER OF SEQ ID NOS: 309
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 219
; LENGTH: 848
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: sequence A-heavy chain of clostridium botulinum toxin type A

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US-10-360-101-219

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Query Match 55.7%; Score 423.5; DB 2; Length 848;
Best Local Similarity 56.9%; Pred. No. 6.6e-40;
Matches 82; Conservative 23; Mismatches 34; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db 550 VFKYSQMINISDYINRWIFVTITNNRLTCKSIYINGRLIDQKPTISNLGNIHASNNIMFKL 609

Qy 61 VGCNDT-RYVGIRYKVFDTGLGKTEIETLYSDPPSILKDFWGNVLLYNKRYLLNLL 119
Db 610 DGCRTTHRYIKWIFNFDKELNEKEIKOLYDQNSGILKDFWGDYLYQDKPYMLNLY 669

Qy 120 RTDKSITQNSNFLNINQQRGVYQK 143
Db 670 DPNKYVDVN----NIGIRGYMLK 689
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Search completed: March 2, 2006, 00:49:34
Job time : 18.7077 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 57.2993 Seconds
(without alignments)
1050.055 Million cell updates/sec

Title: US-08-981-087B-3
Perfect score: 761
Sequence: 1 VFNTYQMISDISYINKWIFV.....ITQNSFLNINQGVYQKP 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications_AA_Main:
1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep.*
2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep.*
3: /cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep.*
4: /cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep.*
5: /cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep.*
6: /cgn2_6/ptodata/1/pubpaa/US11_PUBCOMB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
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2	761	100.0	431	2	US-08-981-087A-1
3	761	100.0	432	3	US-09-910-186A-16
4	761	100.0	432	3	US-09-910-186A-34
5	761	100.0	432	4	US-10-452-024-178
6	761	100.0	645	4	US-10-130-973A-8
7	761	100.0	645	4	US-10-478-516-5
8	761	100.0	657	4	US-10-478-516-7
9	761	100.0	657	4	US-10-130-973A-7
10	761	100.0	862	4	US-10-130-973A-4
11	761	100.0	887	4	US-10-130-973A-6
12	761	100.0	979	4	US-10-478-516-26
13	761	100.0	1032	4	US-10-130-973A-15
14	761	100.0	1032	4	US-10-130-973A-14
15	761	100.0	1092	4	US-10-478-516-23
16	761	100.0	1192	4	US-10-478-516-24
17	761	100.0	1192	4	US-10-452-024-152
18	761	100.0	1278	4	US-10-205-516-12
19	761	100.0	1288	4	US-10-205-516-26
20	761	100.0	1288	4	US-10-452-024-162
21	632	83.0	1280	4	US-10-452-024-156
22	622	81.7	1268	4	US-10-354-774-73
23	612	80.4	448	4	US-10-271-012-73
24	612	80.4	448	4	US-10-729-122-73
25	612	80.4	448	4	US-10-729-039-73
26	612	80.4	448	4	US-10-729-527-73
27	612	80.4	448	5	US-10-729-527-73

28	612	80.4	448	5	US-10-727-898-73	Sequence 73, Appl
29	612	80.4	448	5	US-10-728-696-73	Sequence 73, Appl
30	612	80.4	448	6	US-11-001-241-73	Sequence 71, Appl
31	612	80.4	1274	4	US-10-354-774-71	Sequence 71, Appl
32	612	80.4	1274	4	US-10-271-012-71	Sequence 6, Appl
33	612	80.4	1274	4	US-10-452-024-6	Sequence 71, Appl
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35	612	80.4	1274	5	US-10-729-039-71	Sequence 71, Appl
36	612	80.4	1274	5	US-10-727-898-71	Sequence 71, Appl
37	612	80.4	1274	5	US-10-728-696-71	Sequence 71, Appl
38	612	80.4	1274	6	US-11-001-241-71	Sequence 14, Appl
39	612	80.4	449	3	US-09-910-186A-14	Sequence 56, Appl
40	497.5	65.4	452	4	US-10-354-774-56	Sequence 56, Appl
41	497.5	65.4	452	4	US-10-271-012-56	Sequence 56, Appl
42	497.5	65.4	452	4	US-10-729-122-56	Sequence 56, Appl
43	497.5	65.4	452	4	US-10-729-039-56	Sequence 56, Appl
44	497.5	65.4	452	5	US-10-729-527-56	Sequence 56, Appl
45	497.5	65.4	452	5	US-10-729-527-56	Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-3
; Sequence 3, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Pasechnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304A1th Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0; Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981,087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 3:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 144 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-3

Query Match 100.0%; Score 761; DB 2; Length 144;
Best Local Similarity 100.0%; Pred. No. 8.5e-71;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60

Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120
Db 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120

Qy 121 TDKSITQNSFLNINQORGWYQKP 144
Db 121 TDKSITQNSFLNINQORGWYQKP 144

RESULT 2
US-08-981-087A-1
; Sequence 1, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Pasachnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHUYE P.C.
; STREET: 1100 No. US20020081304A1th Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patentin Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981.087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 1:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 431 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-1

Query Match 100.0%; Score 761; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 3.4e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60

Db 145 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 204

Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120

Db 205 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 264

Qy 121 TDKSITQNSFLNINQORGWYQKP 144

Db 265 TDKSITQNSFLNINQORGWYQKP 288

RESULT 3
US-09-910-186A-16
; Sequence 16, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Material Command
; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
; FILE REFERENCE: A33626-A 067252.0107
; CURRENT APPLICATION NUMBER: US/09/910.186A
; CURRENT FILING DATE: 2001-07-20
; PRIOR APPLICATION NUMBER: PCT/US00/12890
; PRIOR FILING DATE: 2000-05-12
; PRIOR APPLICATION NUMBER: 09/611.419
; PRIOR FILING DATE: 2000-07-06
; PRIOR APPLICATION NUMBER: 60/133.865
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133.866
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133.867
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133.868
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133.869
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133.873
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 08/123.975
; PRIOR FILING DATE: 1993-09-21
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 16
; LENGTH: 432
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Synthetic Construct
US-09-910-186A-16

Query Match 100.0%; Score 761; DB 3; Length 432;
Best Local Similarity 100.0%; Pred. No. 3.4e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60

Db 146 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 205

Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120

Db 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 265

Qy 121 TDKSITQNSFLNINQORGWYQKP 144

Db 266 TDKSITQNSFLNINQORGWYQKP 289

RESULT 4
US-09-910-186A-34
; Sequence 34, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Material Command

TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM

TITLE OF INVENTION: NEUROTOXIN

FILE REFERENCE: A33626-A 067252.0107

CURRENT APPLICATION NUMBER: US/09/910,186A

PRIOR FILING DATE: 2001-07-20

PRIOR APPLICATION NUMBER: PCT/US00/12890

PRIOR FILING DATE: 2000-05-12

PRIOR APPLICATION NUMBER: 09/611,419

PRIOR FILING DATE: 2000-07-06

PRIOR APPLICATION NUMBER: 60/133,865

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,866

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,867

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,868

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,869

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,873

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 08/123,975

PRIOR FILING DATE: 1993-09-21

NUMBER OF SEQ ID NOS: 34

SOFTWARE: FastSeq for Windows Version 4.0

SEQ ID NO 34

LENGTH: 432

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: Synthetic Construct

US-09-910-186A-34

Query Match 100.0%; Score 761; DB 3; Length 432;

Best Local Similarity 100.0%; Pred. No. 3.4e-70;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VENVYQISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60

DB 146 VENVYQISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 205

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPPPSILKDFWGNLYLLYNNKRYLLNLLR 120

DB 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPPPSILKDFWGNLYLLYNNKRYLLNLLR 265

QY 121 TDKSITQNSFLNINQORGVYQKP 144

DB 266 TDKSITQNSFLNINQORGVYQKP 289

RESULT 5

US-10-452-024-178

Sequence 178, Application US/10452024

Publication No. US20040013687A1

GENERAL INFORMATION:

APPLICANT: Simpson, Lance

APPLICANT: Park, Jung-Beak

APPLICANT: Makymowich, Andrew

TITLE OF INVENTION: Compositions and Methods For Transepithelial Molecular Transport

FILE REFERENCE: 9855-96U1

CURRENT APPLICATION NUMBER: US/10/452,024

CURRENT FILING DATE: 2003-06-02

PRIOR APPLICATION NUMBER: 60/384,949

PRIOR FILING DATE: 2002-05-31

NUMBER OF SEQ ID NOS: 188

SOFTWARE: Patent in version 3.2

SEQ ID NO 178

LENGTH: 432

TYPE: PRT

ORGANISM: Clostridium botulinum

US-10-452-024-178

Query Match 100.0%; Score 761; DB 4; Length 432;

Best Local Similarity 100.0%; Pred. No. 3.4e-70;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VENVYQISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60

DB 146 VENVYQISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 205

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPPPSILKDFWGNLYLLYNNKRYLLNLLR 120

DB 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPPPSILKDFWGNLYLLYNNKRYLLNLLR 265

QY 121 TDKSITQNSFLNINQORGVYQKP 144

DB 266 TDKSITQNSFLNINQORGVYQKP 289

RESULT 6

US-10-130-973A-8

Sequence 8, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, Clifford

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR APPLICATION NUMBER: PCT/GB00/04644

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: GB 9928530.6

PRIOR FILING DATE: 1999-12-02

PRIOR APPLICATION NUMBER: GB 008658.7

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: Patent in version 3.0

SEQ ID NO 8

LENGTH: 645

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-8

Query Match 100.0%; Score 761; DB 4; Length 645;

Best Local Similarity 100.0%; Pred. No. 5.6e-70;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VENVYQISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60

DB 359 VENVYQISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 418

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPPPSILKDFWGNLYLLYNNKRYLLNLLR 120

DB 419 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPPPSILKDFWGNLYLLYNNKRYLLNLLR 478

QY 121 TDKSITQNSFLNINQORGVYQKP 144

DB 479 TDKSITQNSFLNINQORGVYQKP 502

RESULT 7

US-10-478-516-5

Sequence 5, Application US/10478516

Publication No. US2004020889A1

GENERAL INFORMATION:

APPLICANT: Sutton, John M.

APPLICANT: Shone, Clifford C.

TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins

FILE REFERENCE: 1581.1000000

CURRENT APPLICATION NUMBER: US/10/478,516

CURRENT FILING DATE: 2003-11-24

PRIOR APPLICATION NUMBER: PCT/GB02/02384

```
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: diphtheria toxin translocation domain with BONT/F-HC
US-10-478-516-5

Query Match      100.0%; Score 761; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 5.6e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy      1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db      359 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 418

Qy      61 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db      419 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 478

Qy      121 TDKSITQNSFLNINQQRGVYQKP 144
Db      479 TDKSITQNSFLNINQQRGVYQKP 502

RESULT 8
US-10-478-516-6
; Sequence 6, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 6
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: thrombin linker, diphtheria toxin translocation domain, BONT/F-HC
US-10-478-516-6

Query Match      100.0%; Score 761; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.8e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy      1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db      371 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 430

Qy      61 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db      431 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 490

Qy      121 TDKSITQNSFLNINQQRGVYQKP 144
Db      491 TDKSITQNSFLNINQQRGVYQKP 514

RESULT 9
US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 685
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, BONT/F-
US-10-478-516-7

Query Match      100.0%; Score 761; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 6.1e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy      1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db      371 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 430

Qy      61 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db      431 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 490

Qy      121 TDKSITQNSFLNINQQRGVYQKP 144
Db      491 TDKSITQNSFLNINQQRGVYQKP 514

RESULT 9
```

```
US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, BONT/F-
US-10-478-516-7

Query Match      100.0%; Score 761; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.8e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy      1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db      371 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 430

Qy      61 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db      431 VGCNDTRYVGIRYKVFDTLKGTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 490

Qy      121 TDKSITQNSFLNINQQRGVYQKP 144
Db      491 TDKSITQNSFLNINQQRGVYQKP 514

RESULT 10
US-10-130-973A-7
; Sequence 7, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 7
; LENGTH: 685
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-7

Query Match      100.0%; Score 761; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 6.1e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
```



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Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db 399 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 458
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 459 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 518
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 519 TDKSITQNSNLFNLINQQRGVYQKP 542

RESULT 11
US-10-130-973A-4
; Sequence 4, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 4
; LENGTH: 862
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-4
Query Match 100.0%; Score 761; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 8.1e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db 576 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 635
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 636 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 695
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 696 TDKSITQNSNLFNLINQQRGVYQKP 719

RESULT 12
US-10-130-973A-6
; Sequence 6, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
```

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; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 6
; LENGTH: 887
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-6
Query Match 100.0%; Score 761; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 8.4e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db 601 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 660
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 661 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 720
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 721 TDKSITQNSNLFNLINQQRGVYQKP 744

RESULT 13
US-10-478-516-26
; Sequence 26, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 26
; LENGTH: 979
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
; OTHER INFORMATION: translocation
; OTHER INFORMATION: domain, with BoNT/P-HC
US-10-478-516-26
Query Match 100.0%; Score 761; DB 4; Length 979;
Best Local Similarity 100.0%; Pred. No. 9.5e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db 693 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 752
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 753 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 812
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 813 TDKSITQNSNLFNLINQQRGVYQKP 836
```

RESULT 14
US-10-130-973A-15
; Sequence 15, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.092000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 15
; LENGTH: 1032
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-15

Query Match 100.0%; Score 761; DB 4; Length 1032;
Best Local Similarity 100.0%; Pred. No. 1e-69;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNVTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDNILLFKI 60
Db 746 VFNVTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDNILLFKI 805

QY 61 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPPSILKDFWGNLYLLYNKRYLLNLLR 120
Db 806 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPPSILKDFWGNLYLLYNKRYLLNLLR 865

QY 121 TDKSITQNSNPLNINQQRGVYQKP 144
Db 866 TDKSITQNSNPLNINQQRGVYQKP 889

RESULT 15
US-10-130-973A-14
; Sequence 14, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.092000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 14
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-14

Query Match 100.0%; Score 761; DB 4; Length 1092;
Best Local Similarity 100.0%; Pred. No. 1.1e-69;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNVTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDNILLFKI 60
Db 806 VFNVTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDNILLFKI 865

QY 61 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPPSILKDFWGNLYLLYNKRYLLNLLR 120
Db 866 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPPSILKDFWGNLYLLYNKRYLLNLLR 925

QY 121 TDKSITQNSNPLNINQQRGVYQKP 144
Db 926 TDKSITQNSNPLNINQQRGVYQKP 949

Search completed: March 2, 2006, 01:17:48
Job time : 58.2993 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:12:18 ; Search time 5.84687 Seconds
(without alignments)
491.279 Million cell updates/sec

Title: US-08-981-087B-3
Perfect score: 761
Sequence: 1 VFNYTQMISIDYINKWIFV.....ITQNSNLFNINQQRGVYQKP 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 133702 seqs, 19947517 residues

Total number of hits satisfying chosen parameters: 133702

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA New:
1: /cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB pep.*
2: /cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB pep.*
3: /cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB pep.*
4: /cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB pep.*
5: /cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB pep.*
6: /cgn2_6/ptodata/1/pubpaa/US10_NEW_PUB pep.*
7: /cgn2_6/ptodata/1/pubpaa/US11_NEW_PUB pep.*
8: /cgn2_6/ptodata/1/pubpaa/US60_NEW_PUB pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	761	100.0	1059	7	US/11/062
2	761	100.0	1084	7	US/11/062
3	612	80.4	838	6	US-10-909-769-28
4	497.5	65.4	829	6	US-10-909-769-26
5	440.5	57.9	849	6	US-10-909-769-18
6	440.5	57.9	1067	7	US/11/062
7	440.5	57.9	1092	7	US/11/062
8	296.5	39.0	855	6	US-10-909-769-30
9	296	38.9	900	6	US-10-909-769-20
10	284.5	37.4	1070	7	US/11/062
11	284.5	37.4	1095	7	US-11-077-550-20
12	284.5	37.4	1169	7	US-10-909-769-24
13	245.5	32.3	834	6	US-11-077-550-141
14	240.5	31.6	1315	7	US-10-909-769-22
15	239	31.4	842	6	US-10-909-769-22
16	89	11.7	2367	7	US-11-051-453-42
17	76.5	10.1	1356	7	US-11-129-741-2939
18	76.5	10.1	1356	7	US-11-129-741-2941
19	76.5	10.1	1356	7	US-11-129-741-2943
20	76.5	10.1	1356	7	US-11-129-741-2945
21	76.5	10.1	1356	7	US-11-129-741-2949
22	76.5	10.1	1356	7	US-11-129-741-2951
23	76.5	10.1	1356	7	US-11-129-741-4245
24	76.5	10.1	1362	6	US-10-895-064-420
25	76.5	10.1	1362	7	US-11-129-741-420

26	74.5	9.8	1351	7	US-11-129-741-2937	Sequence 2937, Ap
27	74.5	9.8	1385	7	US-11-129-741-3655	Sequence 3655, Ap
28	73.5	9.7	360	7	US-11-098-686-10796	Sequence 10796, A
29	73	9.6	302	6	US-10-926-709-2	Sequence 2, Appli
30	73	9.6	302	6	US-10-926-709-7	Sequence 7, Appli
31	72.5	9.5	1351	7	US-11-129-741-2947	Sequence 2947, Ap
32	72	9.5	302	6	US-10-926-709-8	Sequence 8, Appli
33	72	9.5	1089	7	US-11-098-686-10150	Sequence 10150, A
34	71.5	9.4	369	7	US-11-087-099-2275	Sequence 2275, Ap
35	71	9.3	448	7	US-11-052-554A-230	Sequence 230, App
36	70.5	9.3	140	7	US-11-052-554A-240	Sequence 240, App
37	70	9.2	342	7	US-11-087-099-4284	Sequence 4284, Ap
38	70	9.2	567	6	US-10-485-517-216	Sequence 216, App
39	70	9.2	743	6	US-10-485-517-351	Sequence 351, App
40	69	9.1	326	7	US-11-087-099-2330	Sequence 230, App
41	69	9.1	326	7	US-11-087-099-3028	Sequence 3028, Ap
42	69	9.1	326	7	US-11-087-099-8258	Sequence 8258, Ap
43	69	9.1	326	7	US-11-087-099-10448	Sequence 10448, A
44	69	9.1	330	7	US-11-087-099-10448	Sequence 5, Appli
45	69	9.1	464	6	US-10-959-322-5	

ALIGNMENTS

RESULT 1
US/11/062
; Sequence 5, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1561.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 5
; LENGTH: 1059
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-5

Query Match	100.0%;	Score 761;	DB 7;	Length 1059;
Best Local Similarity	100.0%;	Pred. No. 1.9e-67;		
Matches 144;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;
QY	1	VFNVTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSI	NGDIHVS	DNILFKI 60
Db	773	VFNVTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSI	NGDIHVS	DNILFKI 832
QY	61	VCCNDRYVGIRYFKVDETELGKTEITLYSDPPPSILKDFWGNVLYNKKRYLLNLR	120	
Db	833	VCCNDRYVGIRYFKVDETELGKTEITLYSDPPPSILKDFWGNVLYNKKRYLLNLR	892	
QY	121	TDKSTONSFNINQQRGVYQKP	144	
Db	893	TDKSTONSFNINQQRGVYQKP	916	

RESULT 2
US/11/062

; Sequence 8, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 8
; LENGTH: 1084
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062.471A-8

Query Match 100.0%; Score 761; DB 7; Length 1084;
Best Local Similarity 100.0%; Pred. No. 2e-67;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 60
Db 798 VFNTQMISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 857

Qy 61 VGCNDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYLLMLLR 120
Db 858 VGCNDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYLLMLLR 917

Qy 121 TDKSITQNSNFLNINQORGV 144
Db 918 TDKSITQNSNFLNINQORGV 941

RESULT 3
US-10-909-769-28
; Sequence 28, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 28
; LENGTH: 838
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-28

Query Match 80.4%; Score 612; DB 6; Length 838;
Best Local Similarity 82.9%; Pred. No. 8e-53;
Matches 116; Conservative 10; Mismatches 14; Indels 0; Gaps 0;

Qy 1 VFNYTQMISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 60

Db 558 IFRYELNRLISNINKNWIFVTITNNRLGNSRIYINGNLIVEKSTISNLGDIHVSNDILFKI 617
Qy 61 VGCNDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYLLMLLR 120
Db 618 VGCDDETYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYLLMLLR 677

Qy 121 TDKSITQNSNFLNINQORGV 140
Db 678 KDKYITLNSGILNINQORGV 697

RESULT 4
US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-26

Query Match 65.4%; Score 497.5; DB 6; Length 829;
Best Local Similarity 68.1%; Pred. No. 1.7e-41;
Matches 94; Conservative 21; Mismatches 22; Indels 1; Gaps 1;

Qy 2 FNYTQMISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 61
Db 552 FNYGNAGISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 611

Qy 62 GCONDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYLLMLLR 121
Db 612 NCSYTRYIGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYLLMLLR 671

Qy 122 DKSI-TONGNFLNINQORGV 138
Db 672 NNFIDRRKOSTLSINNIR 689

RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence

```
;
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-18

Query Match      57.9%; Score 440.5; DB 6; Length 849;
Best Local Similarity 57.6%; Pred. No. 7.4e-36;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
551 VFYKQMINISDYINRWIFVTITNNRLNLSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 610
Qy 61 VGCNDT-RYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLLNKRYLLNLL 119
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
611 DGCDDTHRYIWKYFNLFDEKELNEKEIKDLYDNQNSGILKDFWGDYLYQDKPYMLNLY 670
Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
671 DPNKYVDVNVNGIRGYMYLKGPRG 694

RESULT 6
US/11/062
; Sequence 3, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
; LENGTH: 1067
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-3

Query Match      57.9%; Score 440.5; DB 7; Length 1067;
Best Local Similarity 57.6%; Pred. No. 9.7e-36;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
769 VFYKQMINISDYINRWIFVTITNNRLNLSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 828
Qy 61 VGCNDT-RYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLLNKRYLLNLL 119
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
829 DGCDDTHRYIWKYFNLFDEKELNEKEIKDLYDNQNSGILKDFWGDYLYQDKPYMLNLY 888
Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
889 DPNKYVDVNVNGIRGYMYLKGPRG 912

RESULT 7
US/11/062
; Sequence 6, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
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; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 6
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match      57.9%; Score 440.5; DB 7; Length 1092;
Best Local Similarity 57.6%; Pred. No. 1e-35;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKI 60
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
794 VFYKQMINISDYINRWIFVTITNNRLNLSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 853
Qy 61 VGCNDT-RYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLLNKRYLLNLL 119
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
854 DGCDDTHRYIWKYFNLFDEKELNEKEIKDLYDNQNSGILKDFWGDYLYQDKPYMLNLY 913
Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
914 DPNKYVDVNVNGIRGYMYLKGPRG 937

RESULT 8
US-10-909-769-30
; Sequence 30, Application US/10909769
; Publication No. US2006024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
; FILE REFERENCE: ALLE0010-100 (R012003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 30
; LENGTH: 855
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-30

Query Match      39.0%; Score 296.5; DB 6; Length 855;
Best Local Similarity 49.6%; Pred. No. 1.3e-21;
Matches 58; Conservative 22; Mismatches 36; Indels 1; Gaps 1;

Qy 2 FNYTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILFKIV 61
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
552 FEYSIKDNISDYINKWFSITITNDRLGNANIYINGSLKSEKILNDRINSNDIDFKLI 611
Qy 62 GCND-TRYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLLNKRYLLN 117
```



```

; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 20
; LENGTH: 1169
; TYPE: PRT
; ORGANISM: Clostridium botulinum
; US-11-077-550-20

Query Match 37.4%; Score 284.5; DB 7; Length 1169;
Best Local Similarity 39.3%; Pred. No. 2.9e-20;
Matches 59; Conservative 27; Mismatches 45; Indels 19; Gaps 4;

QY 2 FNYTOMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHSDIHSNLFKIV 61
DB 987 FEYNIREDISSEYNWFFVTITNN-LNNAKTYINGKLESNTDIDKIDREVIANGIIPKLD 1045

QY 62 GEND-TRVVGIRYKVPDETELGTETIETLSDEPDPSILKDFWGNVLLYKRYLLNL- 118
DB 1046 GIDRTQFIMWKYFISFIMTELSSQSIERYKIOSYSEYKDFWGNPLMYNKEYYMFNAGN 1105

QY 119 -----LRTDKSI-----TONSNFLN 133
DB 1106 KNSYIKKKDPSVGEILTRSKYNQSKVIN 1135

RESULT 13
US-10-909-769-24
; Sequence 24, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristic
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: Patent in version 3.3
; SEQ ID NO 24
; LENGTH: 834
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
; US-10-909-769-24

Query Match 32.3%; Score 245.5; DB 6; Length 834;
Best Local Similarity 35.0%; Pred. No. 1.4e-16;
Matches 48; Conservative 33; Mismatches 55; Indels 1; Gaps 1;

; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 20
; LENGTH: 1169
; TYPE: PRT
; ORGANISM: Clostridium botulinum
; US-11-077-550-20

Query Match 31.6%; Score 240.5; DB 7; Length 1315;
Best Local Similarity 42.0%; Pred. No. 7.5e-16;
Matches 47; Conservative 22; Mismatches 42; Indels 1; Gaps 1;

QY 15 NKWFTVITNNRLGNSRIYINGNLIDEKSIHSDIHSNLFKIVGC-NDTRVVGIRY 73
DB 1029 NKWFTVITNNRLGNSRIYINGNLIDEKSIHSDIHSNLFKIVGC-NDTRVVGIRY 73

QY 74 FKVFDTELGTETIETLSDEPDPSILKDFWGNVLLYKRYLLNLRTDKSI 125
DB 1089 FRIFCKALNPKEIKLYTSILTSILFLDRDFWGNPLRYDTEYYLIPVASSKDV 1140

RESULT 15
US-10-909-769-22
; Sequence 22, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; US-10-909-769-22

; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 141
; LENGTH: 1315
; TYPE: PRT
; ORGANISM: Clostridium tetani
; US-11-077-550-141

Query Match 31.6%; Score 240.5; DB 7; Length 1315;
Best Local Similarity 42.0%; Pred. No. 7.5e-16;
Matches 47; Conservative 22; Mismatches 42; Indels 1; Gaps 1;

QY 15 NKWFTVITNNRLGNSRIYINGNLIDEKSIHSDIHSNLFKIVGC-NDTRVVGIRY 73
DB 1029 NKWFTVITNNRLGNSRIYINGNLIDEKSIHSDIHSNLFKIVGC-NDTRVVGIRY 73

QY 74 FKVFDTELGTETIETLSDEPDPSILKDFWGNVLLYKRYLLNLRTDKSI 125
DB 1089 FRIFCKALNPKEIKLYTSILTSILFLDRDFWGNPLRYDTEYYLIPVASSKDV 1140

RESULT 15
US-10-909-769-22
; Sequence 22, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; US-10-909-769-22
```

; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist

; FILE REFERENCE: ALLE0010-100 (ROI2003-146)

; CURRENT APPLICATION NUMBER: US/10/909,769

; CURRENT FILING DATE: 2004-08-02

; NUMBER OF SEQ ID NOS: 34

; SOFTWARE: PatentIn version 3.3

; SEQ ID NO 22

; LENGTH: 842

; TYPE: PRT

; ORGANISM: Artificial sequence

; FEATURE:

; OTHER INFORMATION: Amino acid sequence of HC

US-10-909-769-22

Query Match 31.4%; Score 239; DB 6; Length 842;
 Best Local Similarity 37.0%; Pred. No. 6.3e-16;
 Matches 54; Conservative 25; Mismatches 57; Indels 10; Gaps 2;

QY 2 FNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNILEKIV 61

Db 544 PSYDISNNAPGY-NKWFVTVTNMMGNKTYINGKLDITIKVKELTGINFSTTITFEIN 602

QY 62 GCNDTRYV-----GIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNVLLYNKR 112

Db 603 KIPDTGLITSDSDNINMWIRDFYIFAKELDGKDINILENSLQYTNVVKDYWGNDLYNKE 662

QY 113 YLLNLLRTDKSITONSFLNINQOR 138

Db 663 YVMNIDYLNRYMVANSRQIVENTRR 688

Search completed: March 2, 2006, 01:18:30
 Job time : 6.84687 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:31:42 ; Search time 68.5139 Seconds
(without alignment)
917.057 Million cell updates/sec

Title: US-08-981-087B-4

Perfect score: 757

Sequence: 1 NIPENTRLTYGVEIIRKNG.....TSSNGCFWFSIKHGHWQEN 143

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A Geneseq 21.*

- 1: Geneseqp1980a.*
- 2: Geneseqp1990a.*
- 3: Geneseqp2000a.*
- 4: Geneseqp2001a.*
- 5: Geneseqp2002a.*
- 6: Geneseqp2003a.*
- 7: Geneseqp2003bs.*
- 8: Geneseqp2004a.*
- 9: Geneseqp2005a.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	757	100.0	143	2	Aaw09017 Immunogen
2	757	100.0	431	2	Aaw09014 Immunogen
3	757	100.0	432	2	Aab04103 Botulinum
4	757	100.0	432	4	Aab04096 Botulinum
5	757	100.0	645	4	Aae07894 Modified
6	757	100.0	645	6	Aae35692 Dipt HN d
7	757	100.0	657	6	Aae35693 BoNT/F-Hc
8	757	100.0	657	6	Aae35694 BoNT/F-Hc
9	757	100.0	685	4	Aae07893 Modified
10	757	100.0	862	4	Aae07890 Modified
11	757	100.0	887	4	Aae07892 Modified
12	757	100.0	979	6	Aae35713 BoNT/F-Hc
13	757	100.0	1032	4	Aae07901 C. botuli
14	757	100.0	1059	3	Aay93309 A mangane
15	757	100.0	1084	3	Aay93312 A mangane
16	757	100.0	1092	4	Aae07900 C. botuli
17	757	100.0	1192	6	Aae35711 BoNT/F-Hc
18	757	100.0	1192	6	Aae35710 BoNT/F-Hc
19	743	98.2	432	3	Aay77138 Synthetic
20	607	80.2	448	2	Aaw68399 Clostridi
21	401	53.0	419	4	Aab04095 Botulinum
22	401	53.0	449	3	Aay77137 Synthetic
23	401	53.0	449	4	Aab04094 Botulinum
24	401	53.0	452	2	Aaw68396 Clostridi

25	374.5	49.5	451	2	Aaw68395	Aaw68395 Clostridi
26	366	48.3	74	9	ADZ36069	Adz36069 C. botuli
27	350.5	46.3	73	9	ADZ36073	Adz36073 C. botuli
28	306.5	40.5	206	3	Aay77144	Aay77144 Botulinum
29	306.5	40.5	382	3	AAB36303	AAB36303 BoNT/A pr
30	306.5	40.5	382	9	ADW24418	ADW24418 C. botulin
31	306.5	40.5	382	9	ADZ60271	ADZ60271 BoNT/A pr
32	306.5	40.5	415	4	AAB04083	AAB04083 Botulinum
33	306.5	40.5	425	9	ADZ60276	ADZ60276 BoNT/A pr
34	306.5	40.5	434	4	AAB04089	AAB04089 Botulinum
35	306.5	40.5	435	4	AAB04090	AAB04090 Botulinum
36	306.5	40.5	437	4	AAB04088	AAB04088 Botulinum
37	306.5	40.5	438	2	AAR95008	AAR95008 Type A ne
38	306.5	40.5	438	2	Aaw68389	Aaw68389 Clostridi
39	306.5	40.5	438	3	AAY77134	Aay77134 Synthetic
40	306.5	40.5	445	2	Aaw68391	Aaw68391 Clostridi
41	306.5	40.5	462	2	AAR95009	AAR95009 Type A ne
42	306.5	40.5	462	2	Aaw68390	Aaw68390 Clostridi
43	306.5	40.5	859	9	ADZ69764	ADZ69764 Botulinum
44	306.5	40.5	1067	3	AAY93307	Aay93307 A mangane
45	306.5	40.5	1092	3	AAY93310	Aay93310 A mangane

ALIGNMENTS

RESULT 1

Aaw09017
ID Aaw09017 standard; protein; 143 AA.

XX AC Aaw09017;

XX 17-OCT-2003 (revised)

DT 31-MAR-1997 (first entry)

XX Immunogenic type F botulinum toxin polypeptide (aall36-1278).

DE Botulinum toxin; neurotoxin; BoNT/F; immunogen; vaccine; botulinum.

KW Clostridium botulinum; type F strain Langeland.

XX WO9641881-A1.

XX 27-DEC-1996.

XX 12-JUN-1996; 96WO-GB001409.

XX 12-JUN-1995; 95GB-00011909.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;

XX WPI; 1997-065467/06.

XX Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

XX Claim 5; Page 19; 37pp; English.

XX Novel polypeptides (Aaw09014-17) respectively comprise amino acids 848-1278, 848-991, 992-1135 and 1136-1278 in the heavy chain of a type F botulinum neurotoxin (BoNT/F). They lack the L chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose-binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

XX Sequence 143 AA;

XX Query Match 100.0%; Score 757; DB 2; Length 143;

Best Local Similarity 100.0%; Pred. No. 4.4e-71; Mismatches 0; Indels 0; Gaps 0;
Matches 143; Conservative 0;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 60
DB 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 60
QY 61 KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
DB 61 KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
QY 121 RKTSSNGCFWFSFISKEHGQEN 143
DB 121 RKTSSNGCFWFSFISKEHGQEN 143

RESULT 2

AAW09014
ID AAW09014 standard; protein; 431 AA.

XX AC AAW09014;
XX DT 17-OCT-2003 (revised)
XX DT 31-MAR-1997 (first entry)
XX DE Immunogenic type F botulinum toxin heavy chain (aa848-1278).
XX KW Botulinum toxin; neurotoxin; BoB/F; immunogen; vaccine; botulism.
XX OS Clostridium botulinum; type F strain Langeland.

XX PN WO9641881-AL.

XX PD 27-DEC-1996.

XX PF 12-JUN-1996; 96WO-GB001409.

XX PR 12-JUN-1995; 95GB-00011909.

XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX PI Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;

XX DR WPI; 1997-065467/06.
XX DR N-PSDB; AAT48100.

XX PT Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

XX PS Claim 5; Page 16-17; 37pp; English.

XX CC A polypeptide (AAW09014) comprises the heavy chain (amino acids 848-1278) of a type F botulinum neurotoxin (BoNT/F), and can be produced using a synthetic gene (AAT48101) based on the natural gene sequence (AAT48100) for the heavy chain. The polypeptides and its fragments (see also AAW09015-17) lack the light chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

XX SQ Sequence 431 AA;

Query Match 100.0%; Score 757; DB 2; Length 431;

Best Local Similarity 100.0%; Pred. No. 1.8e-70;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 60
DB 289 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 348

QY 61 KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
DB 349 KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 408
QY 121 RKTSSNGCFWFSFISKEHGQEN 143
DB 409 RKTSSNGCFWFSFISKEHGQEN 431

RESULT 3

AAW04103
ID AAW04103 standard; protein; 432 AA.

XX AC AAW04103;
XX DT 11-APR-2001 (first entry)

XX DE Botulinum toxin heavy chain C-terminal sequence (serotype F).

XX KW Botulism; toxin; neurotoxin; heavy chain; recombinant expression; recombinant vector; antigen; immune response; vaccine; bacterium; infection.
XX OS Synthetic.
XX OS Clostridium botulinum.

XX PN WO2000067700-A2.

XX PD 16-NOV-2000.

XX PF 12-MAY-2000; 2000WO-US012890.

XX PR 12-MAY-1999; 99US-0133865P.
XX PR 12-MAY-1999; 99US-0133866P.

XX PR 12-MAY-1999; 99US-0133867P.
XX PR 12-MAY-1999; 99US-0133868P.

XX PR 12-MAY-1999; 99US-0133869P.
XX PR 12-MAY-1999; 99US-0133873P.

XX PR 29-JUL-1999; 99US-0146192P.

XX PA (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

XX PI Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

XX DR WPI; 2001-016048/02.
XX DR N-PSDB; AA54499.

XX PT New nucleic acids encoding the carboxy- or amino-terminal portions of the heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine against botulism.
XX PS Disclosure; Fig 18b; 73pp; English.

XX CC Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain and then posttranslationally nicked, forming a dichain consisting of a 100 kDa heavy chain and a 50 kDa light chain which remain linked by a disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino-terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT) can be used in recombinant expression vectors and expressed in transformed cells to produce peptide antigens useful for eliciting an immune response to give protective immunity against botulinum neurotoxin, which causes botulism. The nucleic acids are expressible in a recombinant organism such as Escherichia coli or Pichia pastoris. The use of recombinant nucleic acids are advantageous since it eliminates the need to culture large quantities of hazardous toxin-producing bacterium. Production yield from the genetically engineered product is also high and cost of production is lower. The nucleic acids can be derived from Clostridium botulinum serotypes A-G

XX SQ Sequence 432 AA;

Query Match 100.0%; Score 757; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.8e-70;

CC	Clostridium botulinum serotypes A-
XX	
SQ	Sequence 432 AA;
	Query Match 100.0%; Score
	Best Local Similarity 100.0%; Pred.
	Matches 143; Conservative 0; Mismatches
QY	1 NIFSNTRLTYGVVEIIRKNGSTDISN
DB	290 NIFSNTRLTYGVVEIIRKNGSTDISN
QY	61 KIILIRTSNNSNLSGLIIVMDSIGN
DB	350 KIILIRTSNNSNLSGLIIVMDSIGN
QY	121 RNTSSNGCPMSFFISKEHGWOEN 14
DB	410 RNTSSNGCPMSFFISKEHGWOEN 43

RESULT 5

AAE07894
ID AAE07894 standard; protein; 645 AA.

AC	AAE07894;
XX	
DT	11-SEP-2003 (revised)
DT	01-NOV-2001 (first entry)

XX Modified clostridial heavy chain fragment #1.

DE Modified clostridial heavy c

Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
tumour; infection; neurodegenerative disease; gene therapy; chimeric;
diphtheria neurotoxin; botulinum neurotoxin type F; BONT/F.

KW diphtheria neurotoxin; botuli

OS *Corynebacterium diphtheriae*.

OS Chimeric.

XX

PN WO200158936-A2.

16-AUG-2007
XX
PD

FD 10-AUG-2001: XX

04-DEC-2000: 2000WO-GB004644.

02-DEC-1999; 99GB-00028530.
07-APR-2000; 2000GB-00008658.
(MICE-) MICROBIOLOGICAL RES AUTHORITY.

XX

PI Shone CC, Sutton JM, Silmar

DR WPI; 2001-514643/56.

PT the therapeutic agent into the neu-

Example 2; Page 44; 50pp; English.

CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain fragment. This sequence is
 CC constructed by fusing the binding domain of botulinum neurotoxin type F
 CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
 CC 11-SEP-2003 to standardise OS field)
 XX
 XX

SQ Sequence 645 AA;

Query Match 100.0%; Score 757; DB 4; Length 645;
 Best Local Similarity 100.0%; Pred. No. 3e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
 DB 503 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 562
 QY 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 120
 DB 563 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 622
 QY 121 RKNTSSNGCFWSPISKEHGQEN 143
 DB 623 RKNTSSNGCFWSPISKEHGQEN 645

RESULT 6

AAE35692
 ID AAE35692 standard; protein; 645 AA.

AC AAE35692;

XX 23-OCT-2003 (revised)

DT 17-JUN-2003 (first entry)

XX DiPT HN domain-BoNT/F-Hc fusion construct.

XX Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW translocation domain; HN domain; DiPT; Hc; botulinum type F neurotoxin;
 KW binding domain; BoNT/F.

XX Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Chimeric.

XX WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

XX Example 12; Page 57-60; 130pp; English.

XX The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory

CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (Dip-HN domain) and botulinum type F neurotoxin from Clostridium
 CC botulinum. This sequence is used in the exemplification of the invention.
 CC (Updated on 23-OCT-2003 to standardise OS field)
 XX

SQ Sequence 645 AA;

Query Match 100.0%; Score 757; DB 6; Length 645;
 Best Local Similarity 100.0%; Pred. No. 3e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
 DB 503 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 562
 QY 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 120
 DB 563 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 622
 QY 121 RKNTSSNGCFWSPISKEHGQEN 143
 DB 623 RKNTSSNGCFWSPISKEHGQEN 645

RESULT 7

AAE35693

ID AAE35693 standard; protein; 657 AA.

AC AAE35693;

XX 17-JUN-2003 (first entry)

XX BoNT/F-Hc-DiPT HN domain-thrombin linker fusion construct.

XX Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; DiPT; Hc; binding domain;
 KW botulinum type F neurotoxin.

XX Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Unidentified.

OS Chimeric.

XX WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

XX PD 16-AUG-2001.
 XX PF 04-DEC-2000; 2000WO-GB004644.
 XX PR 02-DEC-1999; 99GB-00028530.
 XX PR 07-APR-2000; 2000GB-00008658.
 XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX PI Shone CC, Sutton JM, Silman N;
 XX DR WPI; 2001-514643/56.
 XX PT New non toxic polypeptide for delivery of a therapeutic agent for the
 XX PT treatment of a CNS disorder comprising a binding domain that translocates
 XX PT the therapeutic agent into the neuronal cells.
 XX PS Example 9; Page 43; 50pp; English.
 XX CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC HC) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful for treating disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is a modified clostridial heavy chain-superoxide dismutase conjugate. This
 CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
 CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
 CC translocation peptide from influenza virus and a neuronal cell-specific
 CC binding domain from botulinum neurotoxin type F (BoNT/F)
 XX SQ Sequence 685 AA;
 Query Match 100.0%; Score 757; DB 4; Length 685;
 Best Local Similarity 100.0%; Pred. No. 3.3e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLVADISIAKPE 60
 Db 543 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLVADISIAKPE 602
 QY 61 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
 Db 603 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 662
 QY 121 RNTSSNGCFWSFISKEHGWOEN 143
 Db 663 RNTSSNGCFWSFISKEHGWOEN 685
 RESULT 10
 ID AAE07890
 XX AAE07890 standard; protein; 862 AA.
 XX AC AAE07890;
 XX DT 01-NOV-2001 (first entry)
 XX DE Modified clostridial heavy chain-superoxide dismutase conjugate #2.
 KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; diphtheria neurotoxin;
 KW botulinum neurotoxin type F; BoNT/F.
 XX

OS Geobacillus stearothermophilus.
 OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Synthetic.
 OS Chimeric.
 XX PN WO200158936-A2.
 XX PD 16-AUG-2001.
 XX PF 04-DEC-2000; 2000WO-GB004644.
 XX PR 02-DEC-1999; 99GB-00028530.
 XX PR 07-APR-2000; 2000GB-00008658.
 XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX PI Shone CC, Sutton JM, Silman N;
 XX DR WPI; 2001-514643/56.
 XX PT New non toxic polypeptide for delivery of a therapeutic agent for the
 XX PT treatment of a CNS disorder comprising a binding domain that translocates
 XX PT the therapeutic agent into the neuronal cells.
 XX PS Example 9; Page 40; 50pp; English.
 XX CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC HC) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful for treating disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is a modified clostridial heavy chain-superoxide dismutase conjugate. This
 CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
 CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
 CC translocation domain from diphtheria neurotoxin and a neuronal cell-
 CC specific binding domain from botulinum neurotoxin type F (BoNT/F)
 XX SQ Sequence 862 AA;
 Query Match 100.0%; Score 757; DB 4; Length 862;
 Best Local Similarity 100.0%; Pred. No. 4.4e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLVADISIAKPE 60
 Db 720 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLVADISIAKPE 779
 QY 61 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
 Db 780 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 839
 QY 121 RNTSSNGCFWSFISKEHGWOEN 143
 Db 840 RNTSSNGCFWSFISKEHGWOEN 862
 RESULT 11
 ID AAE07892
 XX AAE07892 standard; protein; 887 AA.
 XX AC AAE07892;
 XX DT 01-NOV-2001 (first entry)
 XX

DE Modified clostridial heavy chain-superoxide dismutase conjugate #4.

XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;

KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;

KW superoxide dismutase; SOD; diphtheria neurotoxin; human;

KW botulinum neurotoxin type F; BoNT/F.

OS Homo sapiens.

OS Geobacillus stearothermophilus.

OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Synthetic.

OS Chimeric.

XX WO200158936-A2.

XX 16-AUG-2001.

XX 04-DEC-2000; 2000WO-GB004644.

XX 02-DEC-1999; 99GB-00028530.

PR 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Shone CC, Sutton JM, Silman N;

XX WPI; 2001-514643/56.

DR New non toxic polypeptide for delivery of a therapeutic agent for the

XX treatment of a CNS disorder comprising a binding domain that translocates

PT the therapeutic agent into the neuronal cells.

XX Example 9; Page 42; 50pp; English.

XX The invention relates to a non toxic polypeptide, for delivery of a

CC therapeutic agent to a neuronal cell, which comprises a binding domain

CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as

CC HC) that binds to the neuronal cell and a translocation domain (amino

CC terminal half of HC, designated as HN), that translocates the therapeutic

CC agent into the neuronal cell, where the translocation domain is not a HN

CC domain of a clostridial neurotoxin and is not a fragment or derivative of

CC a HN domain of a clostridial toxin. Polypeptides of the invention are

CC useful for the treatment of a disease state associated with neuronal

CC cells. The polypeptide constructs are useful for delivering therapeutic

CC substances to neuronal cells. They are useful to treat disorders of the

CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours

CC and infection. They are also useful in gene therapy. The present sequence

CC is modified clostridial heavy chain-superoxide dismutase conjugate. This

CC conjugate comprises a mitochondrial leader sequence from human Mn-

CC superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,

CC linker that can be cleaved by thrombin, translocation domain from

CC diphtheria neurotoxin and a neuronal cell-specific binding domain from

CC botulinum neurotoxin type F (BoNT/F)

XX Sequence 887 AA;

SQ

Query Match 100.0%; Score 757; DB 4; Length 887;

Best Local Similarity 100.0%; Pred. No. 4.6e-70;

Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNTRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60

Db 745 NIFSNTRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 804

QY 61 KIILKIRTSNNSLGGIIVMDSIGNNCTMNFQNNNGNIGLGFHNSNLVASSYYNNI 120

Db 805 KIILKIRTSNNSLGGIIVMDSIGNNCTMNFQNNNGNIGLGFHNSNLVASSYYNNI 864

QY 121 RKNTSSNGCFWFSFISKEHGWQEN 143

Db 865 RKNTSSNGCFWFSFISKEHGWQEN 887

RESULT 12

AAE35713

ID AAE35713 standard; protein; 979 AA.

XX

AC AAE35713;

XX

DT 17-JUN-2003 (first entry)

XX

DE BoNT/F-Hc-DiPT HN domain-factor Xa linker-YoPt protein fusion construct.

XX

KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;

KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;

KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;

KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;

KW BoNT/F; translocation domain; HN domain; DiPT; HC; binding domain;

KW botulinum type F neurotoxin; targetted effector protien; YoPt.

XX

OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Yersinia pestis.

OS Unidentified.

OS Chimeric.

XX WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

DR Conjugate for modulating cell survival and cell growth, modulating

XX release of inflammatory mediator from cells, comprises injected bacterial

PT effector protein and a carrier that targets the protein to target cell.

XX Example 12; Page 110-114; 130pp; English.

XX The invention relates to a conjugate comprising an injected bacterial

CC effector protein and a carrier that targets the effector protein to a

CC target cell. Pharmaceutical composition of the invention is useful for a

CC treatment selected from promoting or inhibiting survival of cells;

CC preventing and reversing damage to cells; killing cells; promoting or

CC inhibiting the growth of cells; apoptosis; release of an inflammatory

CC mediator from cells; division of cells and treating intracellular

CC infection and regulating nitric oxide release from cells. The invention

CC is useful in the manufacture of a medicament for treating a neuronal

CC cell, for intracellular infection, for interfering with intracellular

CC trafficking, for modulating expression of cell-surface markers and for

CC inhibiting secretion from cells. The invention is also useful for

CC treating Prion disease, Alzheimer' disease and wide range of disorders

CC including muscle spasms such as blepharospasm, torticollis and

CC hypersecretion disorders such as chronic obstructive pulmonary disease

CC (COPD), bronchitis and asthma. The present sequence is a fusion construct

CC comprising Corynebacterium diphtheriae diphtheria toxin translocation

CC domain (DiPT-HN domain), botulinum type F neurotoxin binding domain

CC (BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide and

CC Yersinia pestis targetted effector protein YoPt. This sequence is used in

CC the exemplification of the invention

XX Sequence 979 AA;

SQ

Query Match 100.0%; Score 757; DB 6; Length 979;

Best Local Similarity 100.0%; Pred. No. 5.2e-70;

Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNTRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60

Db 837 NIFSNTLYTGVEVIRKNGSTDISTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 896
 QY 61 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLLGFHSNNLVASSWYNNI 120
 Db 897 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLLGFHSNNLVASSWYNNI 956
 QY 121 RKNTSSNGCFWFSFISKEHGQEN 143
 Db 957 RKNTSSNGCFWFSFISKEHGQEN 979

RESULT 13
 AAE07901
 ID AAE07901 standard; protein; 1032 AA.
 AC AAE07901;
 XX
 DT 01-NOV-2001 (first entry)
 XX

DE C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.
 XX Clostridium botulinum.
 OS
 XX WO200158936-A2.
 PN
 XX 16-AUG-2001.
 XX
 PF 04-DEC-2000; 2000WO-GB004644.
 XX
 PR 02-DEC-1999; 99GB-00028530.
 PR 07-APR-2000; 2000GB-00008658.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX
 PS Example 2; Page 48; 50pp; English.
 XX

CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial toxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is C. botulinum C2 enterotoxin translocation domain with botulinum
 CC neurotoxin type F (BoNT/F) binding domain used in the exemplification of
 CC the invention
 XX
 SQ Sequence 1032 AA;

Query Match 100.0%; Score 757; DB 4; Length 1032;
 Best Local Similarity 100.0%; Pred. No. 5.5e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTLYTGVEVIRKNGSTDISTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 60

Db 890 NIFSNTLYTGVEVIRKNGSTDISTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 949
 QY 61 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLLGFHSNNLVASSWYNNI 120
 Db 950 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLLGFHSNNLVASSWYNNI 1009
 QY 121 RKNTSSNGCFWFSFISKEHGQEN 143
 Db 1010 RKNTSSNGCFWFSFISKEHGQEN 1032

RESULT 14
 AAY93309
 ID AAY93309 standard; protein; 1059 AA.
 AC AAY93309;
 XX
 DT 04-SEP-2000 (first entry)
 XX

DE A manganese superoxide dismutase (Mn-SOD) construct.
 KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
 KW neuronal cell targeting component; NCTC; neuronal disease;
 KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
 KW Huntington's disease; motor neurone disease;
 KW botulinum neurotoxin serotype F.
 XX
 OS Synthetic.
 OS Geobacillus stearothermophilus.
 OS Clostridium botulinum.
 XX
 PN WO2000028041-A1.
 XX
 PD 18-MAY-2000.
 XX
 PF 05-NOV-1999; 99WO-GB003699.
 XX
 PR 05-NOV-1998; 98GB-00024282.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Hallis B, Silman N;
 XX WPI; 2000-376553/32.
 DR
 XX Novel composition, comprising superoxide dismutase linked by a cleavable
 PT linker to a neuronal cell targeting component useful for delivering
 PT superoxide dismutase to neuronal cells to treat ischemia.
 XX
 PS Disclosure; Page 48-51; 65pp; English.
 XX

CC The present sequence represents a construct of the invention, comprising
 CC a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
 CC be cleaved by thrombin, and a heavy chain derived from botulinum
 CC neurotoxin serotype F. The specification describes a composition for
 CC delivery of SOD to neuronal cells. The composition comprises SOD linked,
 CC by a cleavable linker, to a neuronal cell targeting component (NCTC).
 CC This component has a domain that binds to a neuronal cell and a domain
 CC that translocates the SOD of the composition into the neuronal cell.
 CC After translocation, the linker is cleaved to release the SOD. The
 CC composition is useful for treating neuronal diseases caused or augmented
 CC by oxidative stress, such as ischemic stroke, trauma, Parkinson's
 CC disease, Huntington's disease and motor neurone diseases

Query Match 100.0%; Score 757; DB 3; Length 1059;
 Best Local Similarity 100.0%; Pred. No. 5.7e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTLYTGVEVIRKNGSTDISTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 60

Db 917 NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 976
 Qy 61 KIIKLIIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 120
 Db 977 KIIKLIIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 1036
 Qy 121 RKNTSSNGCFWFSFISKEHGWOEN 143
 Db 1037 RKNTSSNGCFWFSFISKEHGWOEN 1059

RESULT 15

AA93312

ID AA93312 standard; protein; 1084 AA.

XX

AC AA93312;

XX

DT 04-SEP-2000 (first entry)

XX

DE A manganese superoxide dismutase (Mn-SOD) construct.

XX

KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;

KW neuronal cell targeting component; NCTC; neuronal disease;

KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;

KW Huntington's disease; motor neurone disease;

KW botulinum neurotoxin serotype F.

XX

OS Synthetic.

OS Homo sapiens.

OS Geobacillus stearothermophilus.

OS Clostridium botulinum.

XX

PN WO200028041-A1.

XX

PD 18-MAY-2000.

XX

XX 05-NOV-1999; 99WO-GB003699.

XX

PR 05-NOV-1998; 98GB-00024282.

XX

PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX

PI Shone CC, Sutton JM, Hallis B, Silman N;

XX

DR WPI; 2000-376553/32.

XX

Novel composition, comprising superoxide dismutase linked by a cleavable

linker to a neuronal cell targeting component useful for delivering

superoxide dismutase to neuronal cells to treat ischemia.

XX

PS Disclosure; Page 57-60; 65pp; English.

XX

The present sequence represents a construct of the invention, comprising a mitochondrial leader sequence from human manganese superoxide dismutase (Mn-SOD), a Bacillus stearothermophilus Mn-SOD, a linker that can be cleaved by thrombin, and a heavy chain derived from botulinum neurotoxin serotype F. The specification describes a composition for delivery of SOD to neuronal cells. The composition comprises SOD linked, by a cleavable linker, to a neuronal cell targeting component (NCTC). This component has a domain that binds to a neuronal cell and a domain that translocates the SOD of the composition into the neuronal cell. After translocation, the linker is cleaved to release the SOD. The composition is useful for treating neuronal diseases caused or augmented by oxidative stress, such as ischemic stroke, trauma, Parkinson's disease, Huntington's disease and motor neurone diseases

XX Sequence 1084 AA;

Query Match

Best Local Similarity 100.0%; Score 757; DB 3; Length 1084;

Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy

1 NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 942 NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 1001
 Qy 61 KIIKLIIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 120
 Db 1002 KIIKLIIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 1061
 Qy 121 RKNTSSNGCFWFSFISKEHGWOEN 143
 Db 1062 RKNTSSNGCFWFSFISKEHGWOEN 1084

Search completed: March 2, 2006, 00:38:56

Job time : 68.5139 secs

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:39:17 ; Search time 11.9443 Seconds
(without alignments)
1151.928 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NIFSNTRYLTGVEVIIRKNG.....TSSNGCFWFSISKHGQEN 143

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR 80:*
1: PIR1:*
2: PIR2:*
3: PIR3:*
4: PIR4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	607	80.2	1274	2 I40813	neurotoxin type F
2	581	76.8	1268	2 S33411	botulinum neurotoxin
3	401	53.0	1252	2 S21178	botulinum neurotoxin
4	374.5	49.5	1251	2 JH0256	botulinum neurotoxin
5	306.5	40.5	1296	1 BTCLAB	botulinum neurotoxin
6	298.5	39.4	1296	2 I40645	botulinum neurotoxin
7	160	21.1	1291	2 I40631	non-proteolytic botulinum neurotoxin
8	149	19.7	1291	1 A48940	botulinum neurotoxin
9	142.5	18.8	1297	2 S33791	botulinum neurotoxin
10	137	18.1	1315	1 BTCLTN	botulinum neurotoxin
11	108	14.3	1225	2 T08057	probable protein-h
12	107.5	14.2	1222	2 A53878	type E neurotoxin
13	103.5	13.7	1276	2 S11455	botulinum neurotoxin
14	98	12.9	1139	2 S71092	UV-damaged DNA bin
15	96.5	12.7	391	2 S14577	asparagine-rich pr
16	95	12.5	297	2 S60538	envelope polypeptide
17	91.5	12.1	1140	2 S73786	hypothetical prote
18	91	12.0	947	2 T08605	hypothetical prote
19	91	12.0	987	2 A64474	hypothetical prote
20	88.5	11.7	323	1 H64130	glycosyl transfera
21	88.5	11.7	444	2 D97142	surface-layer rela
22	88.5	11.7	874	2 E97302	hypothetical prote
23	88	11.6	1390	2 T14004	trifluoromethyl
24	87.5	11.6	1256	2 S14556	asparagine-rich pr
25	86.5	11.4	419	2 T18420	hypothetical prote
26	86	11.4	1844	2 D71612	hypothetical prote
27	86	11.4	2340	2 B71704	cell surface antig
28	85.5	11.3	407	2 C45600	asparagine-rich bl
29	85.5	11.3	537	2 A23770	asparagine-rich pr

ALIGNMENTS

RESULT.1

I40813
neurotoxin type F - Clostridium botulinum
C:Species: Clostridium botulinum
C>Date: 16-Aug-1996 #sequence_revision 16-Aug-1996 #text_change 09-Jul-2004
C:Accession: I40813; S48108
R:East, A.K.; Richardson, P.T.; Allaway, D.; Collins, M.D.; Roberts, T.A.; Thompson, D.E.
FEMS Microbiol. Lett. 96, 225-230, 1992
A:Title: Sequence of the gene encoding type F neurotoxin of Clostridium botulinum.
A:Reference number: S48103; MUID:94013372; PMID:8408542
A:Accession: S48108
A:Status: preliminary; translation not shown
A:Molecule type: DNA
A:Residues: 1-1274 <RES>
A:Cross-references: UNIPROT:P30996; UNIPARC:UPI0000126B8A; GB:M92906; NID:g144866; PIDN:
R:Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A:Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
A:Reference number: S48103; MUID:94013372; PMID:8408542
A:Accession: S48108
A:Status: preliminary; translation not shown
A:Molecule type: DNA
A:Residues: 634-1002 <CAM>
A:Cross-references: UNIPARC:UPI000016EA7B; EMBL:X70816; NID:g407788; PIDN:CAA50147.1; PI:
C:Superfamily: tetanus toxin
C:Keywords: neurotoxin

Query Match	Best Local Similarity	Score	DB 2;	Length	DB 2;	Indels	Gaps
Matches	118;	Conservative	8;	Mismatches	12;		
QY	1	NIFSNTRYLTGVEVIIRKNGSTDISNTDNFRKNDLAINVVDREVEYRLVADISIAKPE	60				
Db	1137	SVFLNKLVEGVEIIRKNGPIDISNTDNFRKNDLAINVVDREVEYRLVADISIAKPE	1193				
QY	61	KILKIFTSNNNSIGQIIIVMDSIGNCTMNFQNNNGNIGLGFHSHNNLVASSWYNNI	120				
Db	1194	K-EKIIFTSNNNSIGQIIIVMDSIGNCTMNFQNNNGNIGLGFHSHNNLVASSWYNNI	1252				
QY	121	RKNTSSNGCFWFSISKHGQOE	142				
Db	1253	RKNTSSNGCFWFSISKHGQOE	1274				

RESULT 2

S33411
botulinum neurotoxin type F - Clostridium barati
C:Species: Clostridium barati
C>Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004
C:Accession: S33411; S31860
R:Thompson, D.E.; Hutson, R.A.; East, A.K.; Allaway, D.; Collins, M.D.; Richardson, P.T.
FEMS Microbiol. Lett. 108, 175-182, 1993

A;Title: Nucleotide sequence of the gene coding for Clostridium barati type F neurotoxin
A;Reference number: S33411; MUID:93252228; PMID:8486245
A;Accession: S33411
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1268 <THO>
A;Cross-references: UNIPROT:Q45851; UNIPARC:UPI00000BAP8C; EMBL:X68262; NID:g49138; PIDN
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 76.8%; Score 581; DB 2; Length 1268;
Best Local Similarity 76.8%; Pred. No. 3.7e-43;
Matches 109; Conservative 11; Mismatches 22; Indels 0; Gaps 0;

Qy 1 NIPENTLYTCGEVILIRKNGSDTSDNTDNFVRKNDLAYINVDVDRVYRLYADISIAPKE 60
Db 1127 NIFSNARLYTCGEVILIRKNGSDTSDNTDNFVRKNDLAYINVDVDRVYRLYADISIAPKE 1186
Qy 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLGFHNSNLYVASSWYNNI 120
Db 1187 KTIKLRISNSYNSNQIIVMDSIGNNCTMNFONNNGNIGLGFHNSNLYVASSWYNNI 1246
Qy 121 RKNTSNGCFWFSFISKEHGWOE 142
Db 1247 RNNTNRNGCFWFSFISKEHGWOE 1268

RESULT 3
S21178
botulinum neurotoxin type E precursor - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 30-Sep-1993 #sequence revision 30-Sep-1993 #text change 31-Dec-2004
A;Accession: S21178; S48107; JH0257; B35294; A60027; S18111
R;Wheeler, S.M.; Elmore, M.J.; Bodsworth, N.J.; Atkinson, T.; Minton, N.P.
Eur. J. Biochem. 204, 657-667, 1992
A;Title: The complete amino acid sequence of the Clostridium botulinum type-E neurotoxin
A;Reference number: S21178; MUID:92174922; PMID:1541280
A;Accession: S21178
A;Molecule type: DNA
A;Residues: 1-1252 <WHE>
A;Cross-references: UNIPROT:Q00496; UNIPROT:Q45862; UNIPARC:UPI0000010A3; EMBL:X62683;
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
A;Reference number: S48107; MUID:94013372; PMID:8408542
A;Accession: S48107
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA
A;Residues: 616-982 <CAM>
A;Cross-references: UNIPARC:UPI00000BC6F0; EMBL:X70815; NID:g407786; PIDN:CAA50146.1; PI
A;Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993
R;Poulet, S.; Hauser, D.; Quanz, M.; Niemann, H.; Popoff, M.R.
Biochem. Biophys. Res. Commun. 183, 107-113, 1992
A;Title: Sequences of the botulinum neurotoxin E derived from Clostridium botulinum type
A;Reference number: JH0257; MUID:92181428; PMID:1543481
A;Accession: JH0257
A;Status: nucleic acid sequence not shown
A;Molecule type: DNA
A;Residues: 1-176, 'R', 178-197, 'C', 199-339, 'R', 341-772, 'I', 774-962, 'FE', 965-966, 'R', 968-1
A;Cross-references: UNIPARC:UPI000016EA7F; EMBL:X62089; NID:g40393; PIDN:CAA43999.1; PI
A;Experimental source: strain Beluga
R;Binz, T.; Kurazono, H.; Wille, M.; Frevert, J.; Wernars, K.; Niemann, H.
J. Biol. Chem. 265, 9153-9158, 1990
A;Title: The complete sequence of botulinum neurotoxin type A and comparison with other
A;Reference number: A35294; MUID:90264400; PMID:2160960
A;Accession: B35294
A;Status: not compared with conceptual translation
A;Molecule type: DNA
A;Residues: 1-176, 'R', 178-252 <BIN>
A;Cross-references: UNIPARC:UPI000017670F
A;Experimental source: strain Beluga
R;Gimenez, J.A.; DasGupta, B.R.
Biochimie 72, 213-217, 1990

A;Title: Botulinum neurotoxin type E fragmented with endoproteinase Lys-C reveals the st
A;Reference number: A60027; MUID:90344918; PMID:2116911
A;Accession: A60027
A;Molecule type: protein
A;Residues: 420-427 <GIN>
A;Cross-references: UNIPARC:UPI0000176710
A;Experimental source: strain Beluga
A;Note: this fragment was generated by proteolysis with Lys-C rather than with trypsin
C;Comment: The clostridial neurotoxins are highly potent protein toxins that inhibit ne
C;Comment: The heavy chain mediates the binding of toxin to cell receptors while the li
C;Keywords: neurotoxin
F;1-422/Product: botulinum neurotoxin type E light chain #status predicted <LCH>
F;423-1252/Product: botulinum neurotoxin type E heavy chain #status predicted <HCH>
F;412-426/Disulfide bonds: #status predicted

Query Match 53.0%; Score 401; DB 2; Length 1252;
Best Local Similarity 55.4%; Pred. No. 2.7e-27;
Matches 77; Conservative 26; Mismatches 26; Indels 10; Gaps 4;

Qy 7 RLYTGVEVIIRK--NGSTDISNTDNFVRKNDLAYIN--VVDVDRVYRLYADISIAPKEII 63
Db 1120 RLYSGIKVKIQRVNSSTN----DNLVRKNDQYINVFASKTHLFLPYADATATNKEKI 1175
Qy 64 KLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLGFHNSNLYVASSWYNNIRKN 123
Db 1176 KI---SSSGNRFNQVVMNSVGNCTMNFONNNGNIGLGFKADTVASTWYTYTHMRDH 1232
Qy 124 TSSNGCFWFSFISKEHGWOE 142
Db 1233 TNSNGCFWFSFISKEHGWOE 1251

RESULT 4
JH0256
botulinum neurotoxin type E precursor - Clostridium butyricum
C;Species: Clostridium butyricum
C;Date: 30-Jun-1992 #sequence revision 15-May-1998 #text_change 09-Jul-2004
A;Accession: JH0256; S16145
R;Poulet, S.; Hauser, D.; Quanz, M.; Niemann, H.; Popoff, M.R.
Biochem. Biophys. Res. Commun. 183, 107-113, 1992
A;Title: Sequences of the botulinum neurotoxin E derived from Clostridium botulinum typ
A;Reference number: JH0256; MUID:92181428; PMID:1543481
A;Accession: JH0256
A;Status: nucleic acid sequence not shown
A;Molecule type: DNA
A;Residues: 1-27, 'E', 29-1251 <POU>
A;Cross-references: UNIPROT:P30995; UNIPARC:UPI000017670D; EMBL:X62088; NID:g40379
R;Fuji, N.; Kimura, K.; Yashiki, T.; Indoh, T.; Murakami, T.; Tsuzuki, K.; Yokosawa, N
J. Gen. Microbiol. 137, 519-525, 1991
A;Title: Cloning of a DNA fragment encoding the 5'-terminus of the botulinum type E tox
A;Reference number: S16145; MUID:91237316; PMID:2033376
A;Accession: S16145
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-229, 'M', 231-252 <FUJ>
A;Cross-references: UNIPARC:UPI000016EA8F; EMBL:X53180; NID:g40407; PIDN:CAA37321.1; PI
A;Experimental source: strain BL6340
C;Comment: The clostridial neurotoxins are toxins that inhibit neurotransmitter release
C;Comment: The heavy chain mediates the binding of toxin to cell receptors while the li
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin
F;2-422/Product: botulinum neurotoxin type E light chain #status predicted <LIG>
F;423-1251/Product: botulinum neurotoxin type E heavy chain #status predicted <HEA>
F;412-426/Disulfide bonds: #status predicted

Query Match 49.5%; Score 374.5; DB 2; Length 1251;
Best Local Similarity 54.7%; Pred. No. 5.8e-25;
Matches 76; Conservative 24; Mismatches 28; Indels 11; Gaps 5;

Qy 7 RLYTGVEVIIRK--NGSTDISNTDNFVRKNDLAYIN--VVDVDRVYRLYADISIAPKEII 63
Db 1120 RLYSGIKVKIQRVNSSTN----DNLVRKNDQYINVFASKTHLFLPYADATATNKEKI 1175

A;Title: Partial sequence of the light chain of botulinum neurotoxin type A.

A;Reference number: A27000

A;Accession: A27000

A;Molecule type: protein

A;Residues: 2-47 <DAS2>

A;Cross-references: UNIPARC:UPI0000173659

R;Binz, T.; Blaszi, J.; Yamasaki, S.; Baumeister, A.; Link, E.; Suedhof, T.C.; Jahn, R.; J. Biol. Chem. 289, 1617-1620, 1994

A;Title: Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.

A;Reference number: A49708; MUID:94124495; PMID:8294407

A;Contents: annotation

C;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synapses

C;Genetics:

A;Gene: atx; botA

C;Function:

A;Description: catalyzes hydrolysis of an Asn-Arg peptide bond in synaptosomal-associated protein 25

C;Superfamily: tetanus toxin

C;Keywords: disulfide bond; hydrolase; metalloproteinase; neurotoxin; transmembrane protein

F;2-444/Product: botoxilysin A light chain #status experimental <LGT>

F;445-1296/Product: botoxilysin A heavy chain #status experimental <HVT>

F;223,227/Binding site: zinc (His) #status predicted

F;224/Active site: Glu #status predicted

Query Match 40.5%; Score 306.5; DB 1; Length 1296;

Best Local Similarity 44.4%; Pred. No. 6e-19;

Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNTRYLYTGVVEIRKNGSTDISNTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 60

Db 1147 NYLNSLYTGVVEIRKNGSTDISNTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 1203

Qy 61 KIILKIRTSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFPHSN-----LV 111

Db 1204 KILSALEIPDGVN-LSQVVMKSKNDQGITNCKMNLQDNGNDIGFIFGHQFNIAKL 1262

Qy 112 ASSWYNNIRKNTSNGCFWFSFISKEHGWOE 142

Db 1263 ASNWNQRQIERSSRTLCGSWEFIPVDDGWGE 1293

RESULT 6

140645

C;Species: Clostridium botulinum

C;Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004

C;Accession: I40645

R;Willems, A.; East, A.K.; Lawson, P.A.; Collins, M.D. Res. Microbiol. 144, 547-556, 1993

A;Title: Sequence of the gene coding for the neurotoxin of Clostridium botulinum type A

A;Reference number: I40645; MUID:94143603; PMID:8310180

A;Accession: I40645

A;Status: preliminary; translated from GB/EMBL/DBJ

A;Molecule type: DNA

A;Residues: 1-1296 <RES>

A;Cross-references: UNIPROT:Q45894; UNIPARC:UPI000016EA88; EMBL:X73423; NID:G507070; PIR:PIR000001

C;Superfamily: tetanus toxin

C;Keywords: neurotoxin

Query Match 39.4%; Score 298.5; DB 2; Length 1296;

Best Local Similarity 43.4%; Pred. No. 3e-18;

Matches 66; Conservative 22; Mismatches 51; Indels 13; Gaps 4;

Qy 1 NIFSNTRYLYTGVVEIRKNGSTDISNTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 60

Db 1147 NYLNSLYTGVVEIRKNGSTDISNTDNFVRKNDLAYINVDRDVEYRLYADISIAKPE 1203

Qy 61 KIILKIRTSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFPHSN-----LV 111

Db 1204 KILSALEIPDGVN-LSQVVMKSKNDQGITNCKMNLQDNGNDIGFIFGHQFNIAKL 1262

Qy 112 ASSWYNNIRKNTSNGCFWFSFISKEHGWOEN 143

Db 1263 ASNWNQRQIERSSRTLCGSWEFIPVDDGWGES 1294

Db 1163 NIYR-RLYGLKFIKR---YTPNEDSFVXSGDF-----IKLY--VSYNNE 1206
 QY 61 KIILRTSNNLSGQIIVMSIGNNC-----TNFQNNNGG 98
 Db 1207 HIYGPKNQNAFNNLDRIL---RVGYNAPGIPLYKKMAVKLRDLKTSVQLKLYDDKNA 1263
 QY 99 NIGLGFHNSNN-----LVASSWYNNIRKNTSSNGCFWFSFISKEHG 140
 Db 1264 SLGLVTHNGQINDPNDRIILASNNWFNHLKXIL--GCDWYFVPTDEGW 1312

RESULT 11

T09057
 C:Species: Clostridium botulinum
 N;Alternate names: histidine kinase (EC 2.7.3.-) DhkC - slime mold (Dictyostelium discoideum)
 C;Date: 11-Jun-1999 #sequence_revision 11-Jun-1999 #text_change 09-Jul-2004
 R;Binz, T.; Kurazono, H.; Popoff, M.R.; Eklund, M.W.; Sakaguchi, G.; Kozaki, S.; Kriegler, A.; Title: Nucleotide sequence of the gene encoding Clostridium botulinum neurotoxin type A; Reference number: S11455; MUID:91016853; PMID:2216736
 A;Accession: S11455
 A;Status: preliminary; translation not shown
 A;Molecule type: DNA
 A;Residues: 1-1276 <BIN>
 A;Cross-references: UNIPROT:P19321; UNIPARC:UPI0000126B83; EMBL:X54254; NID:g40395; PIDN
 C;Superfamily: tetanus toxin
 C;Keywords: neurotoxin

Query Match 14.3%; Score 108; DB 2; Length 1225;
 Best Local Similarity 30.1%; Pred. No. 0.17;
 Matches 43; Conservative 18; Mismatches 42; Indels 40; Gaps 7;

QY 5 NTRYTGVEVII-----RNGSTD-----ISNTDN-FVRKNDLAYINVVDREVEYRL 50
 Db 12 STLFETIISILYFPFNKNLIDOCQEVTKLNKNKDKVNNNNNNNNNNFNKIE--- 68
 QY 51 YADISTAKPEKIILRTSNNLSGQIIVMSIGNNCCTMNFQNNNGGNIIGLGFHNSNL 110
 Db 69 --BINDKNKEIILNNNNNNKLIKIQEIDS-GNNNNNNNNNNNN----- 114
 QY 111 VASSWYNNIRKNTSSNGCFWFSF 133
 Db 115 -----NNLNKN--SNEIFRNF 128

RESULT 12

A53878
 C:Species: Clostridium botulinum (fragments)
 C;Date: 27-Sep-1994 #sequence_revision 18-Nov-1994 #text_change 31-Dec-2004
 R;Gimenez, J.A.; DasGupta, B.R.
 J. Protein Chem. 11, 255-264, 1992
 A;Title: Peptide fragmentation of botulinum type E neurotoxin: isolation and characterization
 A;Reference number: A53878; MUID:93000392; PMID:1388670
 A;Contents: type E, E-43, Alaska
 A;Accession: A53878
 A;Status: preliminary
 A;Molecule type: protein
 A;Residues: 1-122 <GIN>
 A;Cross-references: UNIPROT:Q9R5H0; UNIPARC:UPI000017670E
 A;Note: sequence modified after extraction from NCBI backbone
 A;Note: sequence extracted from NCBI backbone (NCBIP:115403, NCBIP:115404)
 C;Keywords: neurotoxin

Query Match 14.2%; Score 107.5; DB 2; Length 122;
 Best Local Similarity 45.9%; Pred. No. 0.013;
 Matches 28; Conservative 9; Mismatches 17; Indels 7; Gaps 3;

QY 7 RLYTGVEVIIRK--NGSTDISNTDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKII 63
 Db 66 RLYSGIKVKIQRVNNSSTN-----DNLVRKNDQVTINFAVKTHLFLPLYADTATTNKEKXI 121
 QY 64 K 64
 Db 122 K 122

RESULT 13

S11455
 C:Species: Clostridium botulinum
 C;Date: 18-Feb-1994 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
 R;Binz, T.; Kurazono, H.; Popoff, M.R.; Eklund, M.W.; Sakaguchi, G.; Kozaki, S.; Kriegler, A.; Title: Nucleotide sequence of the gene encoding Clostridium botulinum neurotoxin type A; Reference number: S11455; MUID:91016853; PMID:2216736
 A;Accession: S11455
 A;Status: preliminary; translation not shown
 A;Molecule type: DNA
 A;Residues: 1-1276 <BIN>
 A;Cross-references: UNIPROT:P19321; UNIPARC:UPI0000126B83; EMBL:X54254; NID:g40395; PIDN
 C;Superfamily: tetanus toxin
 C;Keywords: neurotoxin

Query Match 13.7%; Score 103.5; DB 2; Length 1276;
 Best Local Similarity 21.9%; Pred. No. 0.46;
 Matches 40; Conservative 22; Mismatches 42; Indels 79; Gaps 7;

QY 6 TRYTGVEVIIRK--KNGSTDISNTDNFVRK--NDLAYINVVDREVEYRLYADISIAK 58
 Db 1127 SKLYTGNPTIKSVSDKPKYPSRLNGDNIILHMLVNSRKMYIIRDTDT---IYA----- 1177
 QY 59 PEKILIRTSNNLSGQIIVMSIGNNCCTMNF-----QNNNGGNIIGLGFHNSNLVAS 113
 Db 1178 -----TQGECSQNCVYALKLQSNLGNVIGIGIFSINKIVSK 1213
 QY 114 SWY-----YNNIRKNTS-----SNGCFWFSFISKEHG 139
 Db 1214 NKYCQIFSSFRNTMLADIYKPRFSKMYTPVAVTNYETKLLSTSSFWKFSRDPG 1273
 QY 140 WQE 142
 Db 1274 WVE 1276

RESULT 14

S71092
 C:Species: Dictyostelium discoideum
 C;Date: 14-Feb-1997 #sequence_revision 13-Mar-1997 #text_change 09-Jul-2004
 R;Alexander, H.; Lee, S.K.; Yu, S.L.; Alexander, S.
 Nucleic Acids Res. 24, 2295-2301, 1996
 A;Title: The Dictyostelium homolog of the human xeroderma pigmentosum group E gene
 A;Reference number: S71092; MUID:96279729; PMID:8710499
 A;Accession: S71092
 A;Status: preliminary; nucleic acid sequence not shown
 A;Molecule type: DNA
 A;Residues: 1-1139 <ALE>
 A;Cross-references: UNIPROT:Q23865; UNIPARC:UPI000008121F; EMBL:U50042; NID:g1399511; PIDN
 R;Sydow, L.; Alexander, H.; Alexander, S.
 submitted to the EMBL Data Library, April 1992
 A;Reference number: S21443
 A;Accession: S21443
 A;Molecule type: mRNA
 A;Residues: 860-1139 <SYD>
 A;Cross-references: UNIPARC:UPI0000177223; EMBL:X65937
 C;Genetics:
 A;Gene: repE
 A;Introns: 654/2

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:32:07 ; Search time 73.3248 Seconds
(without alignments)
1375.940 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NIPENTRLTYGVEIIRKNG.....TSSNGCFWFSFKSHGQWEN 143

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2166443 seqs, 705528306 residues

Total number of hits satisfying chosen parameters: 2166443

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : UniProt_05.80.*

1: uniprot_sprot.*

2: uniprot_trembl.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	757	100.0	1278	2	Q57236 CLOBO
2	639	84.4	1280	2	Q92AJ5 CLOBO
3	607	80.2	1274	1	BXE CLOBO
4	581	76.8	1268	2	Q45851_9CLOT
5	417.5	55.2	1251	2	Q9K395 CLOBO
6	401	53.0	1252	2	Q54A79 CLOBO
7	391	51.7	1252	2	Q8KZM3 CLOBO
8	391	51.7	1255	2	Q9FAR6 CLOBO
9	384.5	50.8	1250	1	BXE CLOBO
10	374.5	49.5	1250	1	BXE CLOBO
11	306.5	40.5	1295	1	BXA1 CLOBO
12	306.5	40.5	1296	2	Q7B8V4 CLOBO
13	298.5	39.4	1295	1	BXA2 CLOBO
14	298.5	39.4	1296	2	Q5SGH1 CLOBO
15	188	24.8	77	2	Q6Q798 CLOBO
16	165	21.8	77	2	Q6Q797_9CLOT
17	163	21.5	1291	2	Q8GR96 CLOBO
18	160	21.1	1291	2	Q80077 CLOBO
19	154	20.3	1291	2	Q933K0 CLOBO
20	154	20.3	1291	2	Q93G71 CLOBO
21	154	20.3	1291	2	Q92AJ8 CLOBO
22	149	19.7	1290	1	BXB CLOBO
23	142.5	18.6	1296	1	BXG CLOBO
24	141	18.6	451	1	Q9LA13 CLOTE
25	139	18.4	441	1	Q9X708 CLOBO
26	137	18.1	1314	1	TEXX CLOTE
27	131.5	17.4	72	2	Q9R540 CLOBO
28	124	16.4	1310	2	Q93N27 CLOTE
29	112.5	14.9	1643	2	Q7RNL6 PLAYO
30	108	14.3	1225	2	O15784_DICDI
31	108	14.3	1225	2	Q95PI2_DICDI

32	107.5	14.2	60	2	Q9R5H0 CLOBO
33	107.5	14.2	1089	2	Q7PDP6 PLAYO
34	105.5	13.9	926	2	Q7RE38 PLAYO
35	104	13.7	3933	2	Q97239 PLAYO
36	103.5	13.7	854	2	Q6TAN6_9HIV1
37	103.5	13.7	1276	1	BXD CLOBO
38	103	13.6	1145	2	Q9U0J0 PLAYO
39	103	13.6	1205	2	Q81EH4_PLAYO
40	102.5	13.5	2723	2	Q815X3 PLAYO
41	102	13.5	1450	2	Q4Y9B4 PLABE
42	101.5	13.4	330	2	Q7RCT9_PLAYO
43	101.5	13.4	758	2	Q81AY2_PLAYO
44	101.5	13.4	915	2	Q812L0_PLAYO
45	101.5	13.4	2053	2	Q869L1_DICDI

ALIGNMENTS

RESULT 1
Q57236 CLOBO PRELIMINARY; PRT; 1278 AA.
AC Q57236; Q45863;
DT 01-NOV-1996 (TREMBlrel. 01, Created)
DT 01-NOV-1996 (TREMBlrel. 01, Last sequence update)
DT 01-FEB-2005 (TREMBlrel. 29, Last annotation update)
DE BONT/F (Neurotoxin type F).
GN Name=bont/f; Synonyms=bont/F;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OX Clostridium.
NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=NCTC 10281;
RA Hutson R.A.; Collins M.D.;
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
[2]
RN NUCLEOTIDE SEQUENCE.
RA Elmore M.J.; Bodsworth N.J.; Whelan S.M.; Minton N.P.;
RL Submitted (AUG-1994) to the EMBL/GenBank/DBJ databases.
DR EMBL; X81714; CAA57358.1; -; Genomic_DNA.
DR EMBL; L35496; AAA23210.1; -; Genomic_DNA.
DR PIR; S48110; S48110.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metalloproteinase activity; IEA.
DR GO; GO:0009405; P:patogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept_M27_BS.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTXILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
DR Neurotoxin.
SQ SEQUENCE 1278 AA; 147073 MW; A1BE1318431D6918 CRC64;

Query Match 100.0%; Score 757; DB 2; Length 1278;
Best Local Similarity 100.0%; Pred. No. 7.2e-58;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	1	NIPENTRLTYGVEIIRKNGSTDINTDNFRKNDLAYINVVDREVELYADISIAKPE 60
DB	1136	NIPENTRLTYGVEIIRKNGSTDINTDNFRKNDLAYINVVDREVELYADISIAKPE 1195
QY	61	KIKILRTSNNSNGIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 120
DB	1196	KIKILRTSNNSNGIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 1255
QY	121	RKNTSSNGCFWFSFKSHGQWEN 143

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Db      1256 RKTSSNGCFWFSFISKEHGQEN 1278
|||||
RESULT 2
Q9ZAJ5_CLOBO
ID Q9ZAJ5_CLOBO PRELIMINARY; PRT; 1280 AA.
AC Q9ZAJ5
DT 01-MAY-1999 (T-EMBLrel. 10, Created)
DT 01-MAY-1999 (T-EMBLrel. 10, Last sequence update)
DT 01-MAY-2004 (T-EMBLrel. 26, Last annotation update)
DE Bont protein.
GN Name=bont;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RX MEDLINE=98440323; PubMed=9767710; DOI=10.1007/s002849900384;
RA Santos-Buelga J., Collins M.D., East A.K.;
RT "Characterization of the genes encoding the Botulinum neurotoxin
RT complex in a strain of clostridium botulinum producing type B & F
RT neurotoxins."
RL Curr. Microbiol. 37:312-318(1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RX Santos-Buelga J.A.;
RA Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
RL EMBL; Y13631; CAA73972.1; -, Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR GO; GO:0016024; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metalloproteinase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR ProDom; PD001363; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
SQ SEQUENCE 1280 AA; 147486 MW; D0F748976BEC222C CRC64;

Query Match      84.4%; Score 639; DB 2; Length 1280;
Best Local Similarity 84.5%; Pred. NO. 1.9e-47;
Matches 120; Conservative 10; Mismatches 12; Indels 0; Gaps 0;

QY      1 NIFSTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAPKE 60
Db      1139 SVFLNKLKLYEGVEVIIRKNAIDISNTDNFVRKNDLAYINVVDHGVEVLYADISITKSE 1198
QY      61 KIILKIRTSNNISLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 120
Db      1199 KIILKIRTSNPNDLSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSDLLVASSWYNNHI 1258
QY      121 RKTSSNGCFWFSFISKEHGQEF 142
Db      1259 RRTSSNGCFWFSFISKEHGQKE 1280

RESULT 3
BXF_CLOBO
ID BXF_CLOBO STANDARD; PRT; 1274 AA.
AC P30596;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type F precursor (EC 3.4.24.69) (Bont/F)
DE (Bontoxilysin F) [Contains: Botulinum neurotoxin F light chain;

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DE Botulinum neurotoxin F heavy chain].
GN Name=bontF;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type F / ATCC 23387;
RX MEDLINE=93012902; PubMed=1398040; DOI=10.1016/0378-1097(92)90408-G;
RA East A.K., Richardson P.T., Allaway D., Collins M.D., Roberts T.A.,
RA Thompson D.E.;
RT "Sequence of the gene encoding type F neurotoxin of Clostridium
RT botulinum."
RL FEMS Microbiol. Lett. 75:225-230(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-64.
RC STRAIN=Type F / Hobbs FT10;
RX MEDLINE=94297488; PubMed=7764998;
RA East A.K., Collins M.D.;
RT "Conserved structure of genes encoding components of botulinum
RT neurotoxin complex M and the sequence of the gene coding for the
RT nontoxic component in nonproteolytic Clostridium botulinum type F."
RL Curr. Microbiol. 29:69-77(1994).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 634-1002.
RX MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D., Collins M.D., East A.K.;
RT "Gene probes for identification of the botulinum neurotoxin gene and
RT specific identification of the neurotoxin types B, E, and F."
RL J. Clin. Microbiol. 31:2255-2262(1993).
RN [4]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94230352; PubMed=8175689;
RA Yamasaki S., Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
RA Roques B., Fykse E.M., Suedhof T.C., Jahn R., Niemann H.;
RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
RT botulinum neurotoxins and tetanus toxin."
RL J. Biol. Chem. 269:12764-12772(1994).
CC -1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase that catalyzes the hydrolysis of the 58-Gln--Lys-59
CC bond of synaptobrevins-1 and -2.
CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -1- COFACTOR: Binds 1 zinc ion per subunit (by similarity).
CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: types A, B, C1, D, E, F, and G.
CC -1- SIMILARITY: Belongs to the peptidase M27 family.
CC
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation
CC at the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC
CC EMBL; M92906; AAA23263.1; -, Genomic DNA.
CC EMBL; S73676; AAC60475.1; -, Genomic DNA.
CC EMBL; X70820; CAA50151.1; -, Genomic DNA.
CC EMBL; X70816; CAA50147.1; -, Genomic DNA.
CC FIR; I40813; I40813.
CC FIR; S48109; S48109.
CC HSSP; Q45894; 1E1H.
CC MEROPS; M27.002; -.

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DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
DR Neurotoxin.
SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15ED2 CRC64;

Query Match 76.8%; Score 581; DB 2; Length 1268;
Best Local Similarity 76.8%; Pred. No. 2.4e-42;
Matches 109; Conservative 11; Mismatches 22; Indels 0; Gaps 0;

QY 1 NIFSNTRLTVGVEVIRKNGSTDISNTDFVRKNDLAYINVVDREVYRLYADISTAKPE 60
Db 1127 NIFSNTRLTVGVEVIRKNGSTDISNTDFVRKNDLAYINVVDREVYRLYADISTAKPE 1186
QY 61 KIIFKIRTSNNLSLQGIIVMSDIGNCTWFFONNGNGNIGLIGFSSNNLVASSWYNNI 120
Db 1187 KTKIFRISNSYNSQMIIMDSIGNCTWFFKTNNGNDIGLIGFHLNLLVASSWYNNI 1246

QY 121 RKNTSSNGCFWSPISKEHGQWE 142
Db 1247 RNNTRNNGCFWSPISKEHGQWE 1268

RESULT 5
Q9K395_CLOBU
ID Q9K395_CLOBU PRELIMINARY; PRT; 1251 AA.
AC Q9K395;
DT 01-OCT-2000 (TrEMBLrel. 15, Created)
DT 01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT 01-FEB-2005 (TrEMBLrel. 29, Last annotation update)
DE Type B botulinum toxin.
GN Name=bot/E;
OS Clostridium butyricum.
OS Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
NCBI_TaxID=1492;
RX MEDLINE=20509829; PubMed=11055954;
DOI=10.1128/AEM.66.11.4992-4997.2000;
RA Wang X., Magawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y.,
Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RT "Genetic analysis of type E botulinum toxin-producing Clostridium
butyricum strains.";
RL Appl. Environ. Microbiol. 66:4992-4997(2000).
DR EMBL; AB037714; BAB03522.1; -; Genomic DNA.
DR EMBL; AB037704; BAB03512.1; -; Genomic DNA.
DR EMBL; AB037705; BAB03513.1; -; Genomic DNA.
DR EMBL; AB037706; BAB03514.1; -; Genomic DNA.
DR EMBL; AB037710; BAB03518.1; -; Genomic DNA.
DR EMBL; AB037712; BAB03520.1; -; Genomic DNA.
DR EMBL; AB037713; BAB03521.1; -; Genomic DNA.
DR EMBL; AB037711; BAB03519.1; -; Genomic DNA.
DR EMBL; AB037709; BAB03517.1; -; Genomic DNA.
DR EMBL; AB037708; BAB03516.1; -; Genomic DNA.
DR EMBL; AB037707; BAB03515.1; -; Genomic DNA.
DR HSP; Q45894; 1E1H.
DR SMR; Q9K395; 2-412.
DR GO; GO:0008233; F:peptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin_recp_bd_N.
DR InterPro; IPR012500; Toxin trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin R_bind N; 1.
DR Pfam; PF07952; Toxin trans; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.

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SQ SEQUENCE 1251 AA; 143752 MW; 2021P4E427070296 CRC64;

Query Match
Best Local Similarity 55.2%; Score 417.5; DB 2; Length 1251;
Matches 76; Conservative 24; Mismatches 31; Indels 5; Gaps 2;

QY 7 RLYTGVVEIIRK--NGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAPKEKII 66
D 1120 RLYSGIKVKIQ--VNDASTNDRFVRKNDQVYINISNSSVSLYADTNTDKEKTIK-- 1175

QY 67 RTSNNSNSLGIIVMDSIGNCTMNFQNNNGNIGLLGPHSNLVASSWYNNIRKN 126
D 1176 -SSSGNRFQVNVMSVGNCTMNFQNNNGNIGLLGFKADTVVASTWYTHMRDHS 1234

QY 127 NSGCFWSPFSKEHGWOE 142
D 1235 NSGCFWNFISEEHGWOE 1250

RESULT 6
Q54A79 CLOBO
ID Q54A79 CLOBO PRELIMINARY; PRT; 1252 AA.
AC Q54A79;
DT 13-SEP-2005 (TrEMBLrel. 31, Created)
DT 13-SEP-2005 (TrEMBLrel. 31, Last sequence update)
DE Botulinum neurotoxin type E.
GN Name=bot/E;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=35396;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RA Nakamura S., Karasawa T., Kozaki S.;
RL "Sequence of the botulinum neurotoxin type E.";
RL Submitted (MAR-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB082519; BAB96845.1; -, Genomic_DNA.
KW Neurotoxin.
SQ SEQUENCE 1252 AA; 143637 MW; 76401D4D2E95D7A2 CRC64;

Query Match
Best Local Similarity 53.0%; Score 401; DB 2; Length 1252;
Matches 77; Conservative 26; Mismatches 26; Indels 10; Gaps 4;

QY 7 RLYTGVVEIIRK--NGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAPKEKII 63
D 1120 RLYSGIKVKIQVNSSTN---DNLVRKNDQVYINFVASKTHLPPLYADTATNKEKTI 1175

QY 64 KLRTSNNSLGIIVMDSIGNCTMNFQNNNGNIGLLGPHSNLVASSWYNNIRKN 123
D 1176 KI---SSSGNRFQVNVMSVGNCTMNFQNNNGNIGLLGFKADTVVASTWYTHMRDH 1232

QY 124 TSSNGCFWSPFSKEHGWOE 142
D 1233 TNSNGCFWNFISEEHGWOE 1251

RESULT 7
Q8KZM3 CLOBO
ID Q8KZM3 CLOBO PRELIMINARY; PRT; 1252 AA.
AC Q8KZM3;
DT 01-OCT-2002 (TrEMBLrel. 22, Created)
DT 01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
DE Type E botulinum toxin.
GN Name=bot/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;

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[1]
NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 5262;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RA Nakamura S., Karasawa T., Kozaki S.;
RL Submitted (JUL-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB088207; BAC05434.1; -, Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q8KZM3; 2-412.
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metallopeptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
SQ SEQUENCE 1252 AA; 143510 MW; 41B633BB744D3B41 CRC64;

Query Match
Best Local Similarity 51.7%; Score 391; DB 2; Length 1252;
Matches 77; Conservative 24; Mismatches 28; Indels 10; Gaps 4;

QY 7 RLYTGVVEIIRK--NGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAPKEKII 63
D 1120 RLYSGIKVKIQVNSSTN---DNLVRKNDQVYINFVASKTHLPPLYADTATNKEKTI 1175

QY 64 KLRTSNNSLGIIVMDSIGNCTMNFQNNNGNIGLLGPHSNLVASSWYNNIRKN 123
D 1176 KI---SSSGNRFQVNVMSVGNCTMNFQNNNGNIGLLGFKADTVVASTWYTHMRDN 1232

QY 124 TSSNGCFWSPFSKEHGWOE 142
D 1233 TNSNGCFWNFISEEHGWOE 1251

RESULT 8
Q9FAR6 CLOBO
ID Q9FAR6 CLOBO PRELIMINARY; PRT; 1255 AA.
AC Q9FAR6;
DT 01-MAR-2001 (TrEMBLrel. 16, Created)
DT 01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Type E botulinum toxin.
GN Name=bot/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 6340/ATCC 43755/BL 5520/KZ 147;
RX MEDLINE=20509829; PubMed=11055954;
RX DOI=10.1128/AEM.66.11.4992-4997.2000;
RA Wang X., Maegawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y.,
RA Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RL "Genetic analysis of type E botulinum toxin-producing Clostridium
RT butyricum strains.";
RL Appl. Environ. Microbiol. 66:4992-4997(2000).
DR EMBL; AB039264; BAB12249.1; -, Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q9FAR6; 5-415.
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metallopeptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.

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DR PRINTS; PR00760; BONTOLILYSIN.
DR ProDom: PD001963; Botulinum: 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
SQ SEQUENCE 1255 AA; 143917 MW; 1B557B9D58CDBE4D CRC64;

Query Match 51.7%; Score 391; DB 2; Length 1255;
Best Local Similarity 55.4%; Pred. No. 1.4e-25;
Matches 77; Conservative 24; Mismatches 28; Indels 10; Gaps 4;

Qy 7 RLYTGVVILRK--NGSTDISTNTNFRKNDLAYIN-VVDRDVEYRLYADISIAPKII 63
Db 1123 RLYSGIKVKIQRVNNSSTN-----DNLVRKNDQVYINFAVSKTHLLPLYADTATTKKTI 1178
Qy 64 KLIRTSNNSLSGLIIVWDSIGNNCTWNNFONNNGNIGLGFHNSNIVASSWYNNIRKN 123
Db 1179 KI-----SSNGNFRNQVNVNNSVGNCTWNNFKNNGNIGLGFKADTVVASTWYTHWRDN 1235
Qy 124 TSSNGCFWSPFSKHEGWQE 142
Db 1236 TNSNGFFWNFISEHGWE 1254

RESULT 9
BXE_CLOBO STANDARD; PRT; 1250 AA.
AC Q00496; Q45862;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BoNT/E)
DE (Bontoxilysin E) [Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain].
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type E / Beluga;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulin neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=92174922; PubMed=1541280;
RA Whelan S.M., Elmore M.J., Bodsworth N.J., Atkinson T., Minton N.P.;
RT "The complete amino acid sequence of the Clostridium botulinum type-E
RT neurotoxin, derived by nucleotide-sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 204:657-667(1992).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158(1990).
RN [4]
RP PROTEIN SEQUENCE OF 1-13.
RX MEDLINE=85197963; PubMed=3888113;
RA Schmidt J.J., Sathiamoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequences of botulinum neurotoxins types B and
RT E.";
RL Arch. Biochem. Biophys. 238:544-548(1985).
RN [5]
RP PROTEIN SEQUENCE OF 419-426.
RX MEDLINE=90344918; PubMed=2116911; DOI=10.1016/0300-9084(90)90075-R;
RA Gimenez J.A., Dasgupta B.R.;
RT "Botulinum neurotoxin type E fragmented with endoproteinase Lys-C
RT reveals the site trypsin nicks and homology with tetanus neurotoxin.";
```

Biochimie 72:213-217(1990).

[6] NUCLEOTIDE SEQUENCE OF 615-981.
STRAIN=Type E / Hazen 36208;
MEDLINE=94013372; PubMed=8408542;
Campbell K.D., Collins M.D., East A.K.;
RA "Gene probes for identification of the botulin neurotoxin gene and
RT specific identification of neurotoxin types B, E, and F.";
J. Clin. Microbiol. 31:2255-2262(1993).

[7] IDENTIFICATION OF SUBSTRATE.
MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
Schiaivo G., Santucci A., Dasgupta B.R., Mehta P.P., Jones J.,
Benfenati F., Wilson M.C., Montecucco C.;
RA "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
RT COOH-terminal peptide bonds.";
FEBS Lett. 335:99-103(1993).

[8] IDENTIFICATION OF SUBSTRATE.
MEDLINE=94124495; PubMed=8294407;
Binz T., Blaszi J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
Jahn R., Niemann H.;
RA "Proteolysis of SNAP-25 by types E and A botulin neurotoxins.";
J. Biol. Chem. 269:1617-1620(1994).

-1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
release. It binds to peripheral neuronal synapses, is internalized
and moves by retrograde transport up the axon into the spinal cord
where it can move between postsynaptic and presynaptic neurons. It
inhibits neurotransmitter release by acting as a zinc
endopeptidase that catalyzes the hydrolysis of the 180-Arg-|-Ile-
181 bond in SNAP-25.

-1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
detected action on small molecule substrates.

-1- COFACTOR: Binds 1 zinc ion per subunit (By similarity).

-1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
heavy chain (H). The light chain has the pharmacological activity,
while the N- and C-terminal of the heavy chain mediate channel
formation and toxin binding, respectively.

-1- SUBCELLULAR LOCATION: Secreted.

-1- MISCELLANEOUS: There are seven antigenically distinct forms of
botulinum neurotoxin: Types A, B, C1, D, E, F, and G.

-1- SIMILARITY: Belongs to the peptidase M27 family.

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removed.

EMBL; X62089; CAA43999.1; -; Genomic DNA.
EMBL; X62883; CAA44558.1; -; Genomic DNA.
EMBL; X70815; CAA50146.1; -; Genomic DNA.
PIR; S08575; S08575.
PIR; S21178; S21178.
PDB; 1T3A; X-ray; A/B=1-421.
PDB; 1T3C; X-ray; A/B=1-421.
MEROPS; M27.002; -.
InterPro; IPR011591; Botulinum.
InterPro; IPR006025; Pept_M_Zn_BS.
InterPro; IPR000395; Peptidase M27.
InterPro; IPR012928; Toxin_rept_bd_N.
InterPro; IPR012500; Toxin_trans.
Pfam; PF01742; Peptidase_M27; 1.
Pfam; PF07953; Toxin_R_bind_N; 1.
Pfam; PF07952; Toxin_trans; 1.
PRINTS; PR00760; BONTOLILYSIN.
ProDom; PD001963; Botulinum: 1.
PROSITE; PS00142; ZINC_PROTEASE; 1.
3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
Metalloprotease; Direct protein sequencing; Toxin; Transmembrane; Zinc.
INIT MET 0 0
CHAIN 1 421 Botulinum neurotoxin E light chain.

AC P10845; P01561; P18639;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BONT/A)
DE (Bontoxilysin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain]
GN Name=botA; Synonyms=atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / NCTC 2916;
RX MEDLINE=90235864; PubMed=2185020;
RA Thompson D.E., Brehm J.K., Oultram J.D., Swinfield T.-J., Shone C.C.,
RA Atkinson T., Melling J., Minton N.P.;
RT "The complete amino acid sequence of the Clostridium botulinum type A
RT neurotoxin, deduced by nucleotide sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 189:73-81(1990).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / 62A;
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158(1990).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / 62A;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT components of the botulinum toxin complex in proteolytic Clostridium
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
RN [4]
RP NUCLEOTIDE SEQUENCE OF 1-34.
RC STRAIN=Type A / Hall;
RX MEDLINE=89350959; PubMed=2669749;
RA Betley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of
RT the N-terminal encoding region.";
RL Biochem. Biophys. Res. Commun. 162:1388-1395(1989).
RN [5]
RP NUCLEOTIDE SEQUENCE OF 1-18.
RC STRAIN=Type A / NIH;
RX MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RA Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RT "Molecular characterization of two forms of nontoxic-nonhemagglutinin
RT components of Clostridium botulinum type A progenitor toxins.";
RL FEBS Lett. 376:41-44(1995).
RN [6]
RP PROTEIN SEQUENCE OF 1-16.
RX MEDLINE=84178501; PubMed=6370252;
RA Schmidt J.J., Sartymoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequence of the heavy and light chains of
RT botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 119:900-904(1984).
RN [7]
RP PROTEIN SEQUENCE OF 1-46.
RA Dasgupta B.R., Foley J., Niece R.;
RT "Partial sequence of the light chain of botulinum neurotoxin type A.";
RL Biochemistry 26:4162-4162(1987).
RN [8]
RP PROTEIN SEQUENCE OF 1-5 AND 444-456.
RX MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RA Dasgupta B.R., Dekleva M.L.;
RT "Botulinum neurotoxin type A: sequence of amino acids at the N-

terminus and around the nicking site.";
RL Biochimie 72:661-664(1990).
RN [9]
RP PROTEIN SEQUENCE OF 448-474 AND 872-895.
RX MEDLINE=89024662; PubMed=3178218;
RA Sathymoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RT "Botulinum neurotoxin type A: Cleavage of the heavy chain into two
RT halves and their partial sequences.";
RL Arch. Biochem. Biophys. 266:142-151(1988).
RN [10]
RP PROTEIN SEQUENCE OF 448-482.
RX MEDLINE=85285016; PubMed=3896784;
RA Shone C.C., Hambleton P., Melling J.;
RT "Inactivation of Clostridium botulinum type A neurotoxin by trypsin
RT and purification of two tryptic fragments. Proteolytic action near the
RT COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RL Eur. J. Biochem. 151:75-82(1985).
RN [11]
RP PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
RX PubMed=8397793;
RA Gimenez J.A., Dasgupta B.R.;
RT "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72,
RT 45, 42, and 18 kD fragments.";
RL J. Protein Chem. 12:351-363(1993).
RN [12]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
RA Benfenati F., Wilson M.C., Montecucco C.;
RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
RT COOH-terminal peptide bonds.";
RL FEBS Lett. 335:99-103(1993).
RN [13]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94124495; PubMed=8294407;
RA Binz T., Blasi J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
RA Jahn R., Niemann H.;
RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
RL J. Biol. Chem. 269:1617-1620(1994).
RN [14]
RP MUTAGENESIS OF GLU-261; PHE-265 AND TYR-365.
RX MEDLINE=21556941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
RA Rigoni M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;
RT "Site-directed mutagenesis identifies active-site residues of the
RT light chain of botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 288:1231-1237(2001).
RN [15]
RP X-RAY CRYSTALLOGRAPHY (3.3 ANGSTROMS).
RX MEDLINE=98455071; PubMed=9783750;
RA Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
RT "Crystal structure of botulinum neurotoxin type A and implications for
RT toxicity.";
RL Nat. Struct. Biol. 5:898-902(1998).
RN [16]
RP FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure.
CC [17]
RP CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC [18]
RP COFACTOR: Binds 1 zinc ion per subunit.
CC [19]
RP SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H).
CC [20]
RP SUBCELLULAR LOCATION: Secreted.
CC [21]
RP PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the
CC treatment of strabismus and blepharospasm associated with dystonia

and cervical dystonia. Also used for the treatment of hemifacial spasm and a number of other neurological disorders characterized by abnormal muscle contraction.

-i- MISCELLANEOUS: There are seven antigenically distinct forms of botulinum neurotoxin: Types A, B, C1, D, E, F, and G.

-i- SIMILARITY: Belongs to the peptidase M27 family.

-i- DATABASE: NAME=BOTOX product information web site; WWW="http://www.botox.com/site/";

-i- DATABASE: NAME=Protein Spotlight; NOTE=Issue 19 of February 2002; WWW="http://www.expasy.org/spotlight/back issues/spot019.shtml".

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EMBL; X52066; CAA36289.1; -; Genomic DNA.
 EMBL; M30196; AAA23262.1; -; Genomic DNA.
 EMBL; X92973; CAA63551.1; -; Genomic DNA.
 EMBL; D67030; BAA11051.1; -; Genomic DNA.
 EMBL; M27892; AAA23269.1; -; Genomic DNA.
 PIR; A35294; BTCLAB.
 PDB; 3BTA; X-ray; A=1-1295.
 MEROPS; M27.002; -.

InterPro; IPR011591; Botulinum.
 InterPro; IPR006025; Pept M Zn BS.
 InterPro; IPR000395; Peptidase_M27.
 InterPro; IPR012928; Toxin_recp_bd_N.
 InterPro; IPR012500; Toxin_trans.
 Pfam; PF01742; Peptidase_M27; 1.
 Pfam; PF07953; Toxin_R_bind_N; 1.
 Pfam; PF07952; Toxin_trans; 1.
 PRINTS; PR00760; BOTULINUM.
 PROSITE; PD001963; Botulinum; 1.
 PROSITE; PS00142; ZINC_PROTEASE; 1.

3D-structure; Direct protein sequencing; Hydrolase; Metal-binding; Metalloprotease; Neurotoxin; Pharmaceutical; Protease; Toxin; Transmembrane; Zinc.

INIT MET 0 0
 CHAIN 1 447 Botulinum neurotoxin A light-chain.
 CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
 TRANSMEM 626 646 Potential.
 TRANSMEM 655 675 Potential.
 ACT_SITE 223 223 Zinc (catalytic).
 METAL 222 222 Zinc (catalytic).
 METAL 226 226 Zinc (catalytic).
 METAL 261 261 Zinc (catalytic).
 DISULFID 429 453 Interchain (between light and heavy chains).

DISULFID 1234 1279
 VARIANT 26 26 V -> A.
 MUTAGEN 261 261 E->A: Drastic decrease in enzymatic

Query Match 40.5%; Score 306.5; DB 1; Length 1295;
 Best Local Similarity 44.4%; Pred. No. 4.1e-18;
 Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFENTRLTYGVEVIIRKNGSDTSNTDFVRKNDLAYINVVDREVLYADISTAKPE 60
 Db 1146 NIYLNSSLYRGTKFIKKYAS---GNKNIVRNDRVYINVVKKEYRLATNASQAGVE 1202

QY 61 KIIKLITSSNNSLGQIIIVMDS-----IGNCTMNFQNNNGNIGLLGFHNN---LV 111
 Db 1203 KILSALEIPDVGN-LSQVVMKSKNDQGITNCKNQLQDNGNDIGFIGHQFNIAKLV 1261

QY 112 ASSWYNNRKNTSSNGCFWFSFISKEHGWOE 142
 Db 1263 ASWYNNRQIERSRTLGCSEWEPVDDGWGE 1293

RESULT 13
 BXA2_CLOBO
 ID_BXA2_CLOBO STANDARD; PRT; 1295 AA.
 AC Q45894; P77780;
 DT 28-FEB-2003 (Rel. 41, Created)
 DT 28-FEB-2003 (Rel. 41, Last sequence update)
 DT 13-SEP-2005 (Rel. 48, Last annotation update)
 DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)
 DE (Bontoxilin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain].
 GN Name=botA; Synonyms=atx, bna;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Type A / Kyoto-F;
 RX MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;
 RA Willems A., East A.K., Lawson P.A., Collins M.D.;
 RT "Sequence of the gene coding for the neurotoxin of Clostridium botulinum type A associated with infant botulism: comparison with other clostridial neurotoxins.";
 RT Res. Microbiol. 144:547-556(1993).

RESULT 12

Q78BV4_CLOBO

ID Q78BV4_CLOBO PRELIMINARY; PRT; 1296 AA.
 AC Q78BV4;
 DT 10-MAY-2005 (TrEMBLrel. 30, Created)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last sequence update)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last annotation update)
 DE BoNT/A (Neurotoxin BoNT).
 GN Name=boNT/a;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Hall A-hyper;
 RX MEDLINE=22617869; PubMed=12732962; DOI=10.1007/s00284-002-3851-1;
 RA Dineen S.S., Bradshaw M., Johnson E.A.;
 RT "Neurotoxin gene clusters in Clostridium botulinum type A strains: sequence comparison and evolutionary implications.";
 RL Curr. Microbiol. 46:345-352(2003).
 RN [2]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Allergan-Hall A;
 RX MEDLINE=22919384; PubMed=14557061; DOI=10.1016/S0378-1119(03)00792-3;
 RA Zhang L., Lin W.J., Li S., Aoki K.R.;
 RT "Complete DNA sequences of the botulinum neurotoxin complex of Clostridium botulinum type A-Hall (Allergan) strain.";
 RL Gene 315:21-32(2003).
 DR EMBL; AF461540; AAM75961.1; -; Genomic DNA.
 DR EMBL; AF488749; AAO06331.1; -; Genomic DNA.
 KW Neurotoxin.
 SQ SEQUENCE 1296 AA; 149425 MW; DEAF2754AB43B6 CRC64;

Query Match 40.5%; Score 306.5; DB 2; Length 1296;
 Best Local Similarity 44.4%; Pred. No. 4.1e-18;
 Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFENTRLTYGVEVIIRKNGSDTSNTDFVRKNDLAYINVVDREVLYADISTAKPE 60
 Db 1147 NIYLNSSLYRGTKFIKKYAS---GNKNIVRNDRVYINVVKKEYRLATNASQAGVE 1203

QY 61 KIIKLITSSNNSLGQIIIVMDS-----IGNCTMNFQNNNGNIGLLGFHNN---LV 111
 Db 1204 KILSALEIPDVGN-LSQVVMKSKNDQGITNCKNQLQDNGNDIGFIGHQFNIAKLV 1262

QY 112 ASSWYNNRKNTSSNGCFWFSFISKEHGWOE 142
 Db 1263 ASWYNNRQIERSRTLGCSEWEPVDDGWGE 1293

RESULT 13
 BXA2_CLOBO
 ID_BXA2_CLOBO STANDARD; PRT; 1295 AA.
 AC Q45894; P77780;
 DT 28-FEB-2003 (Rel. 41, Created)
 DT 28-FEB-2003 (Rel. 41, Last sequence update)
 DT 13-SEP-2005 (Rel. 48, Last annotation update)
 DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)
 DE (Bontoxilin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain].
 GN Name=botA; Synonyms=atx, bna;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Type A / Kyoto-F;
 RX MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;
 RA Willems A., East A.K., Lawson P.A., Collins M.D.;
 RT "Sequence of the gene coding for the neurotoxin of Clostridium botulinum type A associated with infant botulism: comparison with other clostridial neurotoxins.";
 RT Res. Microbiol. 144:547-556(1993).

[2]
NUCLEOTIDE SEQUENCE OF 1-65.
STRAIN=Type A / Kyoto-F;
MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT components of the botulinum toxin complex in proteolytic Clostridium
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
CC -!- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-|-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure (By similarity).
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H) (By similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC -----
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CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC -----
DR EMBL; X73423; CAA51824.1; -; Genomic DNA.
DR EMBL; X87974; CAA61234.1; -; Genomic DNA.
DR PIR; I40645; I40645.
DR PDB; 1E1H; X-ray; A/C=9-249, B/D=250-415.
DR MEROPS; M27.002; -;
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR012528; Toxin_recept_Bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase_M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; P00760; BONTOXILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; FALSE NEG.
KW 3D-structure; Hydrolase; Metal-binding; Metalloprotease; Neurotoxin;
KW Protease; Toxin; Transmembrane; Zinc.
FT INIT_MET 0 By similarity.
FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
FT TRANSMEM 626 646 Potential.
FT TRANSMEM 655 675 Potential.
FT ACT_SITE 223 223 By similarity.
FT METAL 222 222 Zinc (catalytic) (By similarity).
FT METAL 226 226 Zinc (catalytic) (By similarity).
FT DISULFID 429 453 Interchain (between light and heavy chains) (By similarity).
FT DISULFID 1234 1279 By similarity.
FT SEQUENCE 1295 AA; 149280 MW; 5DA0A13D98D6372 CRC64;
Query Match 39.4%; Score 298.5; DB 1; Length 1295;
Best Local Similarity 43.4%; Pred. No. 2.1e-17;
Matches 66; Conservative 22; Mismatches 51; Indels 13; Gaps 4;
1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYLYADISIAKPE 60

Db 1146 NIYLNSTLYEGTKFIKKYAS---GNEDNVRNDRVYINVVKNEYRLATNASQAGVE 1202
Qy 61 KIKLIRTSNNSLSGLQIIWDS-----IGNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 1203 KILSALEIPDVG-NLSQVVMKSKDDGIRNCKMNLQDNNNDIGFIGFHYDNIKLV 1261
Qy 112 ASSWYNNIRKNTSSNGCFWFSFKSKEHGWQEN 143
Db 1262 ASWYNRQVGKASRTFGCSWEFIPVDDGWGES 1293
RESULT 14
Q58GH1_CLOBO PRELIMINARY; PRT; 1296 AA.
AC Q58GH1;
DT 10-MAY-2005 (TrEMBLrel. 30, Created)
DT 10-MAY-2005 (TrEMBLrel. 30, Last sequence update)
DT 10-MAY-2005 (TrEMBLrel. 30, Last annotation update)
DE Type A2 botulinum neurotoxin.
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=FRI-HIA2;
RA Johnson E.A., Tepp W.H., Bradshaw M., Gilbert R.J., Cook P.E.,
RA McIntosh E.D.G.;
RT "Characterization of Clostridium botulinum Strains Associated with an
RT Infant Botulism Case in the United Kingdom.";
RL J. Clin. Microbiol. 0:0-0(2005).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=FRI-HIA2;
RA Smith T.J., Lou J., Geren I., Forsyth C., Tsai R., Tepp W.H.,
RA Bradshaw M., Johnson E.A., Smith L.A., Marks J.D.;
RT "Sequence variation within botulinum neurotoxin serotypes impacts
RT antibody binding and neutralization.";
RL Submitted (MAR-2005) to the EMBL/GenBank/DBJ databases.
DR EMBL; AY953275; AAX53156.1; -; Genomic DNA.
KW Neurotoxin.
SQ SEQUENCE 1296 AA; 149410 MW; 6F12E7BF28ED69D1 CRC64;
Query Match 39.4%; Score 298.5; DB 2; Length 1296;
Best Local Similarity 43.4%; Pred. No. 2.1e-17;
Matches 66; Conservative 22; Mismatches 51; Indels 13; Gaps 4;
Qy 1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYLYADISIAKPE 60
Db 1147 NIYLNSTLYEGTKFIKKYAS---GNEDNVRNDRVYINVVKNEYRLATNASQAGVE 1203
Qy 61 KIKLIRTSNNSLSGLQIIWDS-----IGNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 1204 KILSALEIPDVG-NLSQVVMKSKDDGIRNCKMNLQDNNNDIGFIGFHYDNIKLV 1262
Qy 112 ASSWYNNIRKNTSSNGCFWFSFKSKEHGWQEN 143
Db 1263 ASWYNRQVGKASRTFGCSWEFIPVDDGWGES 1294
RESULT 15
Q6Q798_CLOBO PRELIMINARY; PRT; 77 AA.
AC Q6Q798;
DT 05-JUL-2004 (TrEMBLrel. 27, Created)
DT 05-JUL-2004 (TrEMBLrel. 27, Last sequence update)
DT 05-JUL-2004 (TrEMBLrel. 27, Last annotation update)
DE Proteolytic neurotoxin type F (Fragment).
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVEYLYADISIAKPE 60

[1]
 RN NUCLEOTIDE SEQUENCE.
 RP STRAIN=CDC B12821;
 RC PubMed=15240298; DOI=10.1128/AEM.70.7.4170-4176.2004;
 RX Franciosa G., Fourshaban M., De Luca A., Buccino A., Dallapiccola B.,
 RA Aureli P.;
 RT "Identification of type a, B, e, and f botulinum neurotoxin genes and
 of botulinum neurotoxicogenic clostridia by denaturing high-performance
 liquid chromatography.";
 RL Appl. Environ. Microbiol. 70:4170-4176 (2004).
 DR EMBL; AY555069; AAS59788.1; -; Genomic_DNA.
 DR GO; GO:0009405; P:pathogenesis; IEA.
 KW Neurotoxin.
 FT NON_TER 1 1
 FT NON_TER 77 77
 SQ SEQUENCE 77 AA; 9199 MW; 884C21514686F8F1 CRC64;

Query Match 24.8%; Score 188; DB 2; Length 77;
 Best Local Similarity 97.4%; Pred. No. 4.2e-09;
 Matches 37; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

QY 1 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAY 38
 Db 40 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAY 77

Search completed: March 2, 2006, 00:46:26
 Job time : 75.3248 secs

Result No.	Score	Query		DB	ID	Description
		Match	Length			
1	306.5	40.5	382	2	US-09-288-326A-9	Sequence 9, Appli
2	306.5	40.5	382	2	US-09-548-409B-9	Sequence 9, Appli
3	306.5	40.5	438	1	US-08-480-604A-23	Sequence 23, Appl
4	306.5	40.5	438	1	US-08-405-496A-23	Sequence 23, Appl
5	306.5	40.5	438	2	US-08-915-136-23	Sequence 23, Appl
6	306.5	40.5	438	2	US-09-084-517-23	Sequence 23, Appl
7	306.5	40.5	462	1	US-08-480-604A-26	Sequence 26, Appl
8	306.5	40.5	462	1	US-08-405-496A-26	Sequence 26, Appl
9	306.5	40.5	462	2	US-08-915-136-26	Sequence 26, Appl
10	306.5	40.5	462	2	US-09-084-517-26	Sequence 26, Appl
11	306.5	40.5	1296	1	US-08-480-604A-28	Sequence 28, Appl
12	306.5	40.5	1296	1	US-08-405-496A-28	Sequence 28, Appl
13	306.5	40.5	1296	2	US-08-915-136-28	Sequence 28, Appl
14	306.5	40.5	1296	2	US-09-084-517-28	Sequence 28, Appl
15	298.5	39.4	848	2	US-10-360-101-219	Sequence 219, Appl
16	281.5	37.2	141	2	US-09-465-276-1	Sequence 22, Appl
17	277.5	36.7	140	2	US-08-446-114A-22	Sequence 22, Appl
18	149	19.7	1290	2	US-10-360-101-220	Sequence 220, Appl
19	137	18.1	452	1	US-07-618-312A-2	Sequence 2, Appli
20	137	18.1	452	1	US-07-618-312A-4	Sequence 4, Appli
21	137	18.1	452	1	US-08-110-786A-8	Sequence 8, Appli
22	137	18.1	452	1	US-08-280-228-2	Sequence 2, Appli
23	137	18.1	452	1	US-08-280-228-4	Sequence 4, Appli
24	137	18.1	618	1	US-08-668-381A-5	Sequence 5, Appli
25	137	18.1	853	2	US-08-913-880C-17	Sequence 17, Appl
26	137	18.1	858	2	US-08-913-880C-16	Sequence 16, Appl
27	137	18.1	860	2	US-08-913-880C-15	Sequence 15, Appl

REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-23

Query Match 40.5%; Score 306.5; DB 1; Length 438;
Best Local Similarity 44.4%; Pred. No. 3.2e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
QY 1 NIFSNTLYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDRDVEYRLYADISIAPKE 60
DB 289 NIYLSLSYRGTFKFIKKYAS---GNKDNIVRNNDRVYINVVKNKEYRLATNASQAGVE 345
QY 61 KIILKLTSSNNSLQGIIVWDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
DB 346 KILSALEIPDVGN-LSQVVMKSKNDQGITNCKKQNLQDNNNDIGFIFGHQFNIAKLV 404
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGMQE 142
DB 405 ASWYNNRQIERSRSLTGCSEFIPVDDGWGE 435

RESULT 5

US-08-915-136-23
Sequence 23, Application US/08915136
Patent No. 6290960

GENERAL INFORMATION:

APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
FILING DATE: US/08/915,136

CLASSIFICATION:

PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321

FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-23

Query Match 40.5%; Score 306.5; DB 2; Length 438;
Best Local Similarity 44.4%; Pred. No. 3.2e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
QY 1 NIFSNTLYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDRDVEYRLYADISIAPKE 60
DB 289 NIYLSLSYRGTFKFIKKYAS---GNKDNIVRNNDRVYINVVKNKEYRLATNASQAGVE 345
QY 61 KIILKLTSSNNSLQGIIVWDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
DB 346 KILSALEIPDVGN-LSQVVMKSKNDQGITNCKKQNLQDNNNDIGFIFGHQFNIAKLV 404
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGMQE 142
DB 405 ASWYNNRQIERSRSLTGCSEFIPVDDGWGE 435

RESULT 6

US-09-084-517-23
Sequence 23, Application US/09084517
Patent No. 6613329

GENERAL INFORMATION:

APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
FILING DATE: US/09/084,517

CLASSIFICATION:

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321


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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-26

Query Match 40.5%; Score 306.5; DB 1; Length 462;
Best Local Similarity 44.4%; Pred. No. 3.5e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNTRYTGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 313 NIYLNSSLYRGTKFIKKYAS---GNKDNIVRNDRVINVVKKEYRLATNASQAGVE 369
Qy 61 KIIKLIRTSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 370 KILSALEIPDVGN-LSQVVMKSKNDQGITNKCKWNLQDNNNDIGFIFGHQFNNAKLV 428
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWOE 142
Db 429 ASNWYNQIERSRSLGCSWEIFPVDGOWGE 459

RESULT 9
US-08-915-136-26
Sequence 26, Application US/08915136
Patent No. 6290960
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
CORRESPONDENCE ADDRESS:
NUMBER OF SEQUENCES: 32
ADDRESS: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995

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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-26

Query Match 40.5%; Score 306.5; DB 2; Length 462;
Best Local Similarity 44.4%; Pred. No. 3.5e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNTRYTGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 313 NIYLNSSLYRGTKFIKKYAS---GNKDNIVRNDRVINVVKKEYRLATNASQAGVE 369
Qy 61 KIIKLIRTSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 370 KILSALEIPDVGN-LSQVVMKSKNDQGITNKCKWNLQDNNNDIGFIFGHQFNNAKLV 428
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWOE 142
Db 429 ASNWYNQIERSRSLGCSWEIFPVDGOWGE 459

RESULT 10
US-08-084-517-26
Sequence 26, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
CORRESPONDENCE ADDRESS:
NUMBER OF SEQUENCES: 30
ADDRESS: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995

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;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/329,154
;; FILING DATE: 25-OCT-1994
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/161,907
;; FILING DATE: 02-DEC-1993
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/985,321
;; FILING DATE: 04-DEC-1992
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/429,791
;; FILING DATE: 31-OCT-1989
;; ATTORNEY/AGENT INFORMATION:
;; NAME: CARROLL, PETER G.
;; REGISTRATION NUMBER: 32,837
;; REFERENCE/DOCKET NUMBER: OPHD-01610
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: (415) 705-8410
;; TELEFAX: (415) 397-8338
;; INFORMATION FOR SEQ ID NO: 26:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 462 amino acids
;; TYPE: amino acid
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
US-09-084-517-26

Query Match 40.5%; Score 306.5; DB 2; Length 462;
Best Local Similarity 44.4%; Pred. No. 3.5e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAPKE 60
Db 313 NIYNLSLYRGTKFIKKYAS---GNKDNIVRNDRVYINVVKKRYRLATNASQAGVE 369
QY 61 KIILRTSNNSLQGIIVMDS-----IGNCTWNFQNNNGNIGLLGFHSNN---LV 111
Db 370 KILSALEIPDVGN-LSQVVVMKSKNDQGITNCKKMLQDNGNDIGFIGHQFNIAKLV 428
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWOE 142
Db 429 ASNWYNRQIERSRSLTGCSEWFIPIVDGWGE 459

RESULT 11
US-08-480-604A-28
; Sequence 28, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patentin Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
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;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/422,711
;; FILING DATE: 14-APR-1995
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/405,496
;; FILING DATE: 16-MAR-1995
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/329,154
;; FILING DATE: 25-OCT-1994
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/161,907
;; FILING DATE: 02-DEC-1993
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/985,321
;; FILING DATE: 04-DEC-1992
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/429,791
;; FILING DATE: 31-OCT-1989
;; ATTORNEY/AGENT INFORMATION:
;; NAME: INGOLIA, DIANE E.
;; REGISTRATION NUMBER: 40,027
;; REFERENCE/DOCKET NUMBER: OPHD-01763
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: (415) 705-8410
;; TELEFAX: (415) 397-8338
;; INFORMATION FOR SEQ ID NO: 28:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 1296 amino acids
;; TYPE: amino acid
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
US-08-480-604A-28

Query Match 40.5%; Score 306.5; DB 1; Length 1296;
Best Local Similarity 44.4%; Pred. No. 1.4e-24;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAPKE 60
Db 1147 NIYNLSLYRGTKFIKKYAS---GNKDNIVRNDRVYINVVKKRYRLATNASQAGVE 1203
QY 61 KIILRTSNNSLQGIIVMDS-----IGNCTWNFQNNNGNIGLLGFHSNN---LV 111
Db 1204 KILSALEIPDVGN-LSQVVVMKSKNDQGITNCKKMLQDNGNDIGFIGHQFNIAKLV 1262
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWOE 142
Db 1263 ASNWYNRQIERSRSLTGCSEWFIPIVDGWGE 1293

RESULT 12
US-08-405-496A-28
; Sequence 28, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; TITLE OF INVENTION: NEUROTOXIN
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patentin Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
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; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-405-496A-28

Query Match 40.5%; Score 306.5; DB 1; Length 1296;
Best Local Similarity 44.4%; Pred. No. 1.4e-24;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAVINVVDREVLYADISIAPKE 60
DB 1147 NYLNSSLYRGTKFIKKYAS---GNKDNVNRNDRVINVVKNEYRLATNASQAGVE 1203
QY 61 KIKLIRTSNNSNLSGIIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
DB 1204 KILSALEIPDVGN-LSQVVVMKSKNDQGITNKKCNQLQDNNNDIGFIFGHQFNNAKLV 1262
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGQOE 142
DB 1263 ASNWYNRQIERSRSLTGCSEWEIFPVDGWE 1293

RESULT 13
US-08-915-136-28
; Sequence 28, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; NUMBER OF SEQUENCES: 32
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136
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; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-915-136-28

Query Match 40.5%; Score 306.5; DB 2; Length 1296;
Best Local Similarity 44.4%; Pred. No. 1.4e-24;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAVINVVDREVLYADISIAPKE 60
DB 1147 NYLNSSLYRGTKFIKKYAS---GNKDNVNRNDRVINVVKNEYRLATNASQAGVE 1203
QY 61 KIKLIRTSNNSNLSGIIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
DB 1204 KILSALEIPDVGN-LSQVVVMKSKNDQGITNKKCNQLQDNNNDIGFIFGHQFNNAKLV 1262
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGQOE 142
DB 1263 ASNWYNRQIERSRSLTGCSEWEIFPVDGWE 1293

RESULT 14
US-09-084-517-28
; Sequence 28, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
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;; SOFTWARE: PatentIn Release #1.0, Version #1.25
;; CURRENT APPLICATION DATA:
;; APPLICATION NUMBER: US/09/084,517
;; FILING DATE:
;; CLASSIFICATION:
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/
;; FILING DATE: 16-MAR-1995
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/329,154
;; FILING DATE: 25-OCT-1994
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/161,907
;; FILING DATE: 02-DEC-1993
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/985,321
;; FILING DATE: 04-DEC-1992
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/429,791
;; FILING DATE: 31-OCT-1989
;; ATTORNEY/AGENT INFORMATION:
;; NAME: CARROLL, PETER G.
;; REGISTRATION NUMBER: 32,837
;; REFERENCE/DOCKET NUMBER: OPHD-01610
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: (415) 705-8410
;; TELEFAX: (415) 397-8338
;; INFORMATION FOR SEQ ID NO: 28:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 1296 amino acids
;; TYPE: amino acid
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
US-09-084-517-28

Query Match 40.5%; Score 306.5; DB 2; Length 1296;
Best Local Similarity 44.4%; Pred. No. 1.4e-24;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
Qy 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
Db 1147 NYLNSLYRGTKFIKKYAS---GNKDNIVRNDRVYINVVVKKEYRLATNASQAGVE 1203
Qy 61 KIIKLRTSNNSLSGQIIIVMDS-----IGNNCTMFQNNNGNIGLLGPHSNN---LV 111
Db 1204 KILSALEIPDVGN-LSQVVMKSKNDQGITKCKKNLQDNNNGNDIGFIFGHFNIAKLV 1262
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGQWE 142
Db 1263 ASNWYNRQIERSRSLTGCSEWEIFPVDDGWGE 1293

RESULT 15
US-10-360-101-219
; Sequence 219, Application US/10360101
; Patent No. 6861236
; GENERAL INFORMATION:
; APPLICANT: Moll, Gert N.
; APPLICANT: Leenhouts, Cornelis J.
; TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
; FILE REFERENCE: 2183-5673
; CURRENT APPLICATION NUMBER: US/10/360,101
; CURRENT FILING DATE: 2003-02-07
; PRIOR APPLICATION NUMBER: EP 02077060.8
; PRIOR FILING DATE: 2002-05-24
; NUMBER OF SEQ ID NOS: 309
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 219
; LENGTH: 848
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: sequence A-heavy chain of clostridium botulinum toxin type A

US-10-360-101-219

Query Match 39.4%; Score 298.5; DB 2; Length 848;
Best Local Similarity 43.4%; Pred. No. 5.9e-24;
Matches 66; Conservative 22; Mismatches 51; Indels 13; Gaps 4;
Qy 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
Db 699 NYLNSLYRGTKFIKKYAS---GNEDNIVRNDRVYINVVVKKEYRLATNASQAGVE 755
Qy 61 KIIKLRTSNNSLSGQIIIVMDS-----IGNNCTMFQNNNGNIGLLGPHSNN---LV 111
Db 756 KILSALEIPDVGN-LSQVVMKSKNDQGITKCKKNLQDNNNGNDIGFIFGHFNIAKLV 814
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGQWE 143
Db 815 ASNWYNRQVKGASRTFGCSWEFIPVDDGWGES 846

Search completed: March 2, 2006, 00:49:34
Job time : 17.5847 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 56.9014 Seconds
(without alignments)

1050.055 Million cell updates/sec

Title: US-08-981-087B-4

Perfect score: 757

Sequence: 1 NISFNRLYTGVEVIRKNG.....TSSNGCFWSPISKHCWQEN 143

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : Published Applications AA Main:

- 1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep.*
- 2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep.*
- 3: /cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep.*
- 4: /cgn2_6/ptodata/1/pubpaa/US10_PUBCOMB.pep.*
- 5: /cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep.*
- 6: /cgn2_6/ptodata/1/pubpaa/US11_PUBCOMB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	757	100.0	143	2	US-08-981-087A-4
2	757	100.0	431	2	Sequence 4, Appli
3	757	100.0	432	3	Sequence 1, Appli
4	757	100.0	432	3	Sequence 16, Appl
5	757	100.0	432	3	Sequence 34, Appl
6	757	100.0	432	4	Sequence 176, App
7	757	100.0	645	4	Sequence 8, Appli
8	757	100.0	645	4	Sequence 5, Appli
9	757	100.0	657	4	Sequence 6, Appli
10	757	100.0	657	4	Sequence 7, Appli
11	757	100.0	865	4	Sequence 4, Appli
12	757	100.0	867	4	Sequence 6, Appli
13	757	100.0	979	4	Sequence 26, Appl
14	757	100.0	1032	4	Sequence 15, Appl
15	757	100.0	1092	4	Sequence 14, Appl
16	757	100.0	1192	4	Sequence 23, Appl
17	757	100.0	1192	4	Sequence 24, Appl
18	757	100.0	1278	4	Sequence 152, App
19	757	100.0	1278	4	Sequence 12, Appl
20	757	100.0	1288	4	Sequence 26, Appl
21	639	84.4	1280	4	Sequence 162, App
22	607	80.2	448	4	Sequence 73, Appl
23	607	80.2	448	4	Sequence 73, Appl
24	607	80.2	448	4	Sequence 73, Appl
25	607	80.2	448	4	Sequence 73, Appl
26	607	80.2	448	5	Sequence 73, Appl
27	607	80.2	448	5	Sequence 73, Appl

28	607	80.2	448	5	US-10-728-696-73	Sequence 73, Appl
29	607	80.2	448	6	US-11-001-241-73	Sequence 73, Appl
30	607	80.2	1274	4	US-10-354-774-71	Sequence 71, Appl
31	607	80.2	1274	4	US-10-271-012-71	Sequence 71, Appl
32	607	80.2	1274	4	US-10-452-024-6	Sequence 6, Appli
33	607	80.2	1274	4	US-10-729-122-71	Sequence 71, Appl
34	607	80.2	1274	4	US-10-729-039-71	Sequence 71, Appl
35	607	80.2	1274	5	US-10-729-527-71	Sequence 71, Appl
36	607	80.2	1274	5	US-10-728-696-71	Sequence 71, Appl
37	607	80.2	1274	5	US-10-728-696-71	Sequence 71, Appl
38	607	80.2	1274	6	US-11-001-241-71	Sequence 71, Appl
39	581	76.8	1268	4	US-10-452-024-156	Sequence 156, App
40	417.5	55.2	1251	4	US-10-452-024-127	Sequence 127, App
41	401	53.0	449	3	US-09-910-186A-14	Sequence 14, Appl
42	401	53.0	452	4	US-10-354-774-56	Sequence 56, Appl
43	401	53.0	452	4	US-10-271-012-56	Sequence 56, Appl
44	401	53.0	452	4	US-10-729-122-56	Sequence 56, Appl
45	401	53.0	452	4	US-10-729-039-56	Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-4
; Sequence 4, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Pasechnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304Alth Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981.087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 4:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 143 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-4

Query Match	100.0%;	Score 757;	DB 2;	Length 143;	
Best Local Similarity	100.0%;	Pred. No. 7.8e-68;			
Matches 143;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;	
QY	1	NIFSNTRLYTGVVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE	60		
DB	1	NIFSNTRLYTGVVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE	60		
QY	61	KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI	120		
DB	61	KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI	120		
QY	121	RKNTSSNGCFWFSFISKEHGQEN	143		
DB	121	RKNTSSNGCFWFSFISKEHGQEN	143		
RESULT 2					
US-08-981-087A-1					
Sequence 1,	Application US/08981087A				
Publication No.	US20020081304A1				
GENERAL INFORMATION:					
APPLICANT:	Elmore, Michael J.				
APPLICANT:	Mauchline, Margaret L.				
APPLICANT:	Minton, Nigel P.				
APPLICANT:	Pasechnik, Vladimir A.				
APPLICANT:	Tibball, Richard W.				
TITLE OF INVENTION:	TYPE F BOTULINUM TOXIN AND USE THEREOF				
NUMBER OF SEQUENCES:	6				
CORRESPONDENCE ADDRESS:					
ADDRESSEE:	NIXON & VANDERHYE P.C.				
STREET:	1100 No. US20020081304A1				
CITY:	Arlington				
STATE:	VA				
COUNTRY:	USA				
ZIP:	22201-4741				
COMPUTER READABLE FORM:					
MEDIUM TYPE:	Floppy disk				
COMPUTER:	IBM PC compatible				
OPERATING SYSTEM:	PC-DOS/MS-DOS				
SOFTWARE:	PatentIn Release #1.0, Version #1.30				
CURRENT APPLICATION DATA:					
APPLICATION NUMBER:	US/08/981,087A				
FILING DATE:	27-May-1998				
CLASSIFICATION:	424				
PRIOR APPLICATION DATA:					
APPLICATION NUMBER:	PCT/GB96/01409				
FILING DATE:	12-JUN-1996				
PRIOR APPLICATION DATA:					
APPLICATION NUMBER:	GB 9511909.5				
FILING DATE:	12-JUN-1995				
ATTORNEY/AGENT INFORMATION:					
NAME:	Crawford, Arthur R.				
REGISTRATION NUMBER:	25,327				
REFERENCE/DOCKET NUMBER:	124-688				
TELECOMMUNICATION INFORMATION:					
TELEPHONE:	703-816-4000				
TELEFAX:	703-816-4100				
INFORMATION FOR SEQ ID NO:	1:				
SEQUENCE CHARACTERISTICS:					
LENGTH:	431 amino acids				
TYPE:	amino acid				
STRANDEDNESS:					
TOPOLOGY:	linear				
MOLECULE TYPE:	peptide				
US-08-981-087A-1					
Query Match	100.0%;	Score 757;	DB 2;	Length 431;	
Best Local Similarity	100.0%;	Pred. No. 3.1e-67;			
Matches 143;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;	
QY	1	NIFSNTRLYTGVVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE	60		
DB	1	NIFSNTRLYTGVVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE	60		
QY	61	KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI	120		
DB	61	KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI	120		
QY	121	RKNTSSNGCFWFSFISKEHGQEN	143		
DB	121	RKNTSSNGCFWFSFISKEHGQEN	143		
RESULT 3					
US-09-910-186A-16					
Sequence 16,	Application US/09910186A				
Publication No.	US20030009025A1				
GENERAL INFORMATION:					
APPLICANT:	U.S. Army Medical Research & Material Command				
TITLE OF INVENTION:	RECOMBINANT VACCINE AGAINST BOTULINUM				
TITLE OF INVENTION:	NEUROTOXIN				
FILE REFERENCE:	A33626-A 067252.0107				
CURRENT APPLICATION NUMBER:	US/09/910,186A				
CURRENT FILING DATE:	2001-07-20				
PRIOR APPLICATION NUMBER:	PCT/US00/12890				
PRIOR FILING DATE:	2000-05-12				
PRIOR APPLICATION NUMBER:	09/611,419				
PRIOR FILING DATE:	2000-07-06				
PRIOR APPLICATION NUMBER:	60/133,865				
PRIOR FILING DATE:	1999-05-12				
PRIOR APPLICATION NUMBER:	60/133,866				
PRIOR FILING DATE:	1999-05-12				
PRIOR APPLICATION NUMBER:	60/133,867				
PRIOR FILING DATE:	1999-05-12				
PRIOR APPLICATION NUMBER:	60/133,868				
PRIOR FILING DATE:	1999-05-12				
PRIOR APPLICATION NUMBER:	60/133,869				
PRIOR FILING DATE:	1999-05-12				
PRIOR APPLICATION NUMBER:	60/133,873</				

;; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM

;; TITLE OF INVENTION: NEUROTOXIN

;; FILE REFERENCE: A3626-A 067252.0107

;; CURRENT APPLICATION NUMBER: US/09/910,186A

;; CURRENT FILING DATE: 2001-07-20

;; PRIORITY APPLICATION NUMBER: PCT/US00/12890

;; PRIORITY FILING DATE: 2000-05-12

;; PRIORITY APPLICATION NUMBER: 09/611,419

;; PRIORITY FILING DATE: 2000-07-06

;; PRIORITY APPLICATION NUMBER: 60/133,865

;; PRIORITY FILING DATE: 1999-05-12

;; PRIORITY APPLICATION NUMBER: 60/133,866

;; PRIORITY FILING DATE: 1999-05-12

;; PRIORITY APPLICATION NUMBER: 60/133,867

;; PRIORITY FILING DATE: 1999-05-12

;; PRIORITY APPLICATION NUMBER: 60/133,868

;; PRIORITY FILING DATE: 1999-05-12

;; PRIORITY APPLICATION NUMBER: 60/133,869

;; PRIORITY FILING DATE: 1999-05-12

;; PRIORITY APPLICATION NUMBER: 60/133,873

;; PRIORITY FILING DATE: 1999-05-12

;; PRIORITY APPLICATION NUMBER: 08/123,975

;; PRIORITY FILING DATE: 1993-09-21

;; NUMBER OF SEQ ID NOS: 34

;; SOFTWARE: Fast-Seq for Windows Version 4.0

;; SEQ ID NO 34

;; LENGTH: 432

;; TYPE: PRT

;; ORGANISM: Artificial Sequence

;; FEATURE:

;; OTHER INFORMATION: Synthetic Construct

;; US-09-910-186A-34

Query Match 100.0%; Score 757; DB 3; Length 432;
Best Local Similarity 100.0%; Pred. No. 3.1e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIFSNTRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 290 NIFSNTRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 349

Qy 61 KIIKLIRTSNNSLSGLIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 120

Db 350 KIIKLIRTSNNSLSGLIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 409

Qy 121 RKTSSNGCFWSPFISKEHGQEN 143

Db 410 RKTSSNGCFWSPFISKEHGQEN 432

RESULT 5

US-10-452-024-178

;; Sequence 178, Application US/10452024

;; Publication No. US20040013687A1

;; GENERAL INFORMATION:

;; APPLICANT: Simpeon, Lance

;; APPLICANT: Park, Jung-Beak

;; APPLICANT: Maksymowich, Andrew

;; TITLE OF INVENTION: Compositions and Methods For Trans epithelial Molecular Transport

;; FILE REFERENCE: 9855-96U1

;; CURRENT APPLICATION NUMBER: US/10/452,024

;; CURRENT FILING DATE: 2003-06-02

;; PRIORITY APPLICATION NUMBER: 60/384,949

;; PRIORITY FILING DATE: 2002-05-31

;; NUMBER OF SEQ ID NOS: 188

;; SOFTWARE: PatentIn version 3.2

;; SEQ ID NO 178

;; LENGTH: 432

;; TYPE: PRT

;; ORGANISM: Clostridium botulinum

;; US-10-452-024-178

Query Match 100.0%; Score 757; DB 4; Length 432;

Best Local Similarity 100.0%; Pred. No. 3.1e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIFSNTRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 290 NIFSNTRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 349

Qy 61 KIIKLIRTSNNSLSGLIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 120

Db 350 KIIKLIRTSNNSLSGLIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 409

Qy 121 RKTSSNGCFWSPFISKEHGQEN 143

Db 410 RKTSSNGCFWSPFISKEHGQEN 432

RESULT 6

US-10-130-973A-8

;; Sequence 8, Application US/10130973A

;; Publication No. US20030147895A1

;; GENERAL INFORMATION:

;; APPLICANT: Shone, Clifford

;; APPLICANT: Sutton, John

;; APPLICANT: Silman, Nigel

;; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

;; FILE REFERENCE: 1581.0920000

;; CURRENT APPLICATION NUMBER: US/10/130,973A

;; CURRENT FILING DATE: 2002-10-21

;; PRIORITY APPLICATION NUMBER: PCT/GB00/04644

;; PRIORITY FILING DATE: 2000-12-04

;; PRIORITY APPLICATION NUMBER: GB 9928530.6

;; PRIORITY FILING DATE: 1999-12-02

;; PRIORITY APPLICATION NUMBER: GB 008658.7

;; PRIORITY FILING DATE: 2000-04-07

;; NUMBER OF SEQ ID NOS: 18

;; SOFTWARE: PatentIn version 3.0

;; SEQ ID NO 8

;; LENGTH: 645

;; TYPE: PRT

;; ORGANISM: Artificial Sequence

;; FEATURE:

;; OTHER INFORMATION: synthetic construct

;; US-10-130-973A-8

Query Match 100.0%; Score 757; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 5.2e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIFSNTRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 503 NIFSNTRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 562

Qy 61 KIIKLIRTSNNSLSGLIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 120

Db 563 KIIKLIRTSNNSLSGLIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 622

Qy 121 RKTSSNGCFWSPFISKEHGQEN 143

Db 623 RKTSSNGCFWSPFISKEHGQEN 645

RESULT 7

US-10-478-516-5

;; Sequence 5, Application US/10478516

;; Publication No. US2004020889A1

;; GENERAL INFORMATION:

;; APPLICANT: Sutton, John M.

;; APPLICANT: Shone, Clifford C.

;; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins

;; FILE REFERENCE: 1581.1000000

;; CURRENT APPLICATION NUMBER: US/10/478,516

;; CURRENT FILING DATE: 2003-11-24

;; PRIORITY APPLICATION NUMBER: PCT/GB02/02384

; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: diphtheria toxin translocation domain with BoNT/F-HC
US-10-478-516-5

Query Match 100.0%; Score 757; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 5.2e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
Db 503 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 562

QY 61 KIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 120
Db 563 KIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 622

QY 121 RNTSSNGCFWFSFISKEHGWQEN 143
Db 623 RNTSSNGCFWFSFISKEHGWQEN 645

RESULT 8

US-10-478-516-6
; Sequence 6, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 6
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: thrombin linker, diphtheria toxin translocation domain, BoNT/F-HC
US-10-478-516-6

Query Match 100.0%; Score 757; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.3e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
Db 515 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 574

QY 61 KIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 120
Db 575 KIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 634

QY 121 RNTSSNGCFWFSFISKEHGWQEN 143
Db 635 RNTSSNGCFWFSFISKEHGWQEN 657

RESULT 9

Query Match 100.0%; Score 757; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 5.6e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, BoNT/F-HC
US-10-478-516-7

Query Match 100.0%; Score 757; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.3e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
Db 515 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDREVRLYADISIAKPE 574

QY 61 KIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 120
Db 575 KIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 634

QY 121 RNTSSNGCFWFSFISKEHGWQEN 143
Db 635 RNTSSNGCFWFSFISKEHGWQEN 657

RESULT 10

US-10-130-973A-7
; Sequence 7, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; PRIOR FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 7
; LENGTH: 685
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-7

Query Match 100.0%; Score 757; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 5.6e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;


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Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 543 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 602
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 603 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 662
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 663 RKNSSNGCFWFSFISKEHGQEN 685

RESULT 11
US-10-130-973A-4
; Sequence 4, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 4
; LENGTH: 862
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
; US-10-130-973A-4

Query Match 100.0%; Score 757; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 7.4e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 720 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 779
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 780 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 839
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 840 RKNSSNGCFWFSFISKEHGQEN 862

RESULT 12
US-10-130-973A-6
; Sequence 6, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 6
; LENGTH: 887
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
; US-10-130-973A-6
```

```
Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 745 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 804
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 805 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 864
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 865 RKNSSNGCFWFSFISKEHGQEN 887

RESULT 13
US-10-478-516-26
; Sequence 26, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 26
; LENGTH: 979
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
; OTHER INFORMATION: translocation
; OTHER INFORMATION: domain, with BONT/F-HC
; US-10-478-516-26

Query Match 100.0%; Score 757; DB 4; Length 979;
Best Local Similarity 100.0%; Pred. No. 8.7e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 837 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 896
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 897 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 956
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 957 RKNSSNGCFWFSFISKEHGQEN 979
```

RESULT 14

US-10-130-973A-15

US-10-130-973A-15

Sequence 15, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, Clifford

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR APPLICATION NUMBER: PCT/GB00/04644

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: GB 9928530.6

PRIOR FILING DATE: 1999-12-02

PRIOR APPLICATION NUMBER: GB 008658.7

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: PatentIn version 3.0

SEQ ID NO 15

LENGTH: 1032

TYPE: PRT

ORGANISM: Clostridium botulinum

US-10-130-973A-15

Query Match	100.0%;	Score 757;	DB 4;	Length 1032;
Best Local Similarity	100.0%;	Prod. No. 9.3e-67;		
Matches 143;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;
QY	1	NIFSNTFLYTGVEVIRIKNGSTDISNTDNTFVRKNDLAYINVDRDVEYRLYADISIAKPE	60	
Db	890	NIFSNTFLYTGVEVIRIKNGSTDISNTDNTFVRKNDLAYINVDRDVEYRLYADISIAKPE	949	
QY	61	KIKLIRTSNNSNLGQIIIVMDISIGNCTWNFQNNNGCNIGLIGFHSNNLVASSWYNNI	120	
Db	950	KIKLIRTSNNSNLGQIIIVMDISIGNCTWNFQNNNGCNIGLIGFHSNNLVASSWYNNI	1009	
QY	121	RKNTSSNGCFWFSISKEHGWOEN	143	
Db	1010	RKNTSSNGCFWFSISKEHGWOEN	1032	

RESULT 15
US-10-130-973A-14
; Sequence 14, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0320000
; CURRENT APPLICATION NUMBER: US/10/130, 973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 14
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-14

Query Match 100.0%; Score 757; DB 4; Length 1092;
Best Local Similarity 100.0%; Pred. No. 1e-66;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy      1 NIFSNRLTGVVIRKXGSTDISNTDNFVRKNDLAYINWVDROVEYRLYADISIAKPE   60
        |||||
Db     950 NIFSNRLTGVVIRKXGSTDISNTDNFVRKNDLAYINWVDROVEYRLYADISIAKPE  1009
        |||||
Qy      61 KIILKLRTSNNNSLQGIIVMDSIGNNCTMFONNGGNIGLLGFHSNNLVASSWYYNNI   120
        |||||
Db    1010 KIILKLRTSNNNSLQGIIVMDSIGNNCTMFONNGGNIGLLGFHSNNLVASSWYYNNI  1069
        |||||
Qy     121 RKNTSSNGCFWFSPISKHGWOEN 143
        |||||
Db    1070 RKNTSSNGCFWFSPISKHGWOEN 1092
        |||||
```

Search completed: March 2, 2006, 01:17:48
Job time : 56.9014 secs

Search completed: March 2, 2006, 01:17:48
Job time : 56.9014 secs

; Sequence 8, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 8
; LENGTH: 1084
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062.471A-8

Query Match 100.0%; Score 757; DB 7; Length 1084;
Best Local Similarity 100.0%; Pred. No. 5.8e-68;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIFSNRLTYGVEVIIRKNGSDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
Db 942 NIFSNRLTYGVEVIIRKNGSDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 1001

Qy 61 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 1002 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 1061

Qy 121 RKTSSNGCFWSPFSKEHGWQEN 143
Db 1062 RKTSSNGCFWSPFSKEHGWQEN 1084

RESULT 3
US-10-909-769-28
; Sequence 28, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 28
; LENGTH: 838
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-28

Query Match 80.2%; Score 607; DB 6; Length 838;
Best Local Similarity 83.1%; Pred. No. 4.6e-53;
Matches 118; Conservative 8; Mismatches 12; Indels 4; Gaps 2;

Qy 1 NIFSNRLTYGVEVIIRKNGSDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 701 SVFLNKLVEGVIRKNGPIDISNTDNFVRKNDLAYINVVDREYRLYAD---TKSE 757

Qy 61 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 758 K-EKIIRTSNLSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 816

Qy 121 RKTSSNGCFWSPFSKEHGWQE 142
Db 817 RRTSSNGCFWSPFSKEHGWKE 838

RESULT 4
US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-26

Query Match 53.0%; Score 401; DB 6; Length 829;
Best Local Similarity 55.4%; Pred. No. 2e-32;
Matches 77; Conservative 26; Mismatches 26; Indels 10; Gaps 4;

Qy 7 RLYTGVEVIIRK---NGSTDISNTDNFVRKNDLAYIN-VVDREYRLYADISIAKPEKII 63
Db 697 RLYSGIKVKIQRVNNSSTN---DNLVRKNDQVYINVFASKTHLFLPYADATTTNKEKTI 752

Qy 64 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKN 123
Db 753 KI---SSSGNRFRQVYVVMNSVGNCTMNFQNNNGNIGLLGFKADTVVASTWYTYTHMRDH 809

Qy 124 TSSNGCFWSPFSKEHGWQE 142
Db 810 TNSNGCFWSPFSKEHGWQE 828

RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence

```

; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-18

Query Match      40.5%; Score 306.5; DB 6; Length 849;
Best Local Similarity 44.4%; Pred. No. 6.1e-23;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 700 NYILNSSLRYGTGKFIKKYAS---GNKDNIVRNRDVRVINVVKKEYRLATNASQAGVE 756
Qy 61 KIILKIRTSNNSLSLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSHN---LV 111
Db 757 KILSALEIPDVGN-LSQVVMKSKNDQGITNCKMKNLDQNNNDIGFIFGHQFNNAKLV 815
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWQE 142
Db 816 ASNWYNRQIERSRSLTGCSEWEIFPVDGCGE 846

RESULT 6
US/11/062
; Sequence 3, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
; LENGTH: 1067
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-3

Query Match      40.5%; Score 306.5; DB 7; Length 1067;
Best Local Similarity 44.4%; Pred. No. 8e-23;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 918 NYILNSSLRYGTGKFIKKYAS---GNKDNIVRNRDVRVINVVKKEYRLATNASQAGVE 974
Qy 61 KIILKIRTSNNSLSLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSHN---LV 111
Db 975 KILSALEIPDVGN-LSQVVMKSKNDQGITNCKMKNLDQNNNDIGFIFGHQFNNAKLV 1033
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWQE 142
Db 1034 ASNWYNRQIERSRSLTGCSEWEIFPVDGCGE 1064

RESULT 7
US/11/062
; Sequence 6, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles

```

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; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 6
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match      40.5%; Score 306.5; DB 7; Length 1092;
Best Local Similarity 44.4%; Pred. No. 8.2e-23;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 943 NYILNSSLRYGTGKFIKKYAS---GNKDNIVRNRDVRVINVVKKEYRLATNASQAGVE 999
Qy 61 KIILKIRTSNNSLSLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSHN---LV 111
Db 1000 KILSALEIPDVGN-LSQVVMKSKNDQGITNCKMKNLDQNNNDIGFIFGHQFNNAKLV 1058
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWQE 142
Db 1059 ASNWYNRQIERSRSLTGCSEWEIFPVDGCGE 1089

RESULT 8
US-10-909-769-20
; Sequence 20, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 20
; LENGTH: 900
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-20

Query Match      21.1%; Score 160; DB 6; Length 900;
Best Local Similarity 29.2%; Pred. No. 3.1e-08;
Matches 47; Conservative 28; Mismatches 66; Indels 20; Gaps 6;

Qy 1 NIFSNRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 741 NYINRYNLTYGKFIIRKESQSN-DQIVRKEDYIHLDLVHLHHEWRVYAYKFKGE 799
Qy 61 KIILKIRTSNNSLSLQIIVM---DSIGNNCTMNFQNN---NGNIGLLGFH----- 106

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Db 800 EKFLFSLISDSNEFFKTTIEKEYDEQPSYSQQLLFKDEESTDDGLIGIHRFYESGVLR 859
Qy 107 ---SNNLVASSWYNNI-RKNTSSN-GCWSFISKEHGWOE 142
Db 860 KKYKDYFCISKWYLKVRKPKYKSNLGCNQWQFIPKDEGWT 900

RESULT 9

US/11/062
; Sequence 4, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassem
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent in Ver. 2.1
; SEQ ID NO 4
; LENGTH: 1070
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker.
US/11/062,471A-4

Query Match 19.7%; Score 149; DB 7; Length 1070;
Best Local Similarity 26.6%; Pred. No. 4.8e-07;
Matches 41; Conservative 28; Mismatches 65; Indels 20; Gaps 5;
Qy 8 LYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDVRYLYADISIAPKEIKILIR 67
Db 918 LYIGKEFIIRKKSQSIN-DDIVRKEDYIYDFNLNQWVRVYKYFKKEEKLFLAP 976
Qy 68 TSNSNLSGLQIIVM---DSIGNNCTMNFQNN--NGNIGLLGFH-----SNNL 110
Db 977 ISDSDEFYNTTIQIKEYDQPTYSCQLLFKDEESTDEIGLIGIHRFYESGIVPEYKDYF 1036
Qy 111 VASSWYNNIRKN--TSSNGCFWGSFISKEHGWOE 142
Db 1037 CISKWYLKVRKPKYNLKLGCNQWQFIPKDEGWT 1070

RESULT 10

US/11/062
; Sequence 7, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassem
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05

; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent in Ver. 2.1
; SEQ ID NO 7
; LENGTH: 1095
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human
US/11/062,471A-7

Query Match 19.7%; Score 149; DB 7; Length 1095;
Best Local Similarity 26.6%; Pred. No. 5e-07;
Matches 41; Conservative 28; Mismatches 65; Indels 20; Gaps 5;
Qy 8 LYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDVRYLYADISIAPKEIKILIR 67
Db 943 LYIGKEFIIRKKSQSIN-DDIVRKEDYIYDFNLNQWVRVYKYFKKEEKLFLAP 1001
Qy 68 TSNSNLSGLQIIVM---DSIGNNCTMNFQNN--NGNIGLLGFH-----SNNL 110
Db 1002 ISDSDEFYNTTIQIKEYDQPTYSCQLLFKDEESTDEIGLIGIHRFYESGIVPEYKDYF 1061
Qy 111 VASSWYNNIRKN--TSSNGCFWGSFISKEHGWOE 142
Db 1062 CISKWYLKVRKPKYNLKLGCNQWQFIPKDEGWT 1095

RESULT 11

US-10-909-769-30
; Sequence 30, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristics
; FILE REFERENCE: ALLE0010-100 (NOI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: Patent in version 3.3
; SEQ ID NO 30
; LENGTH: 855
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-30

Query Match 18.8%; Score 142.5; DB 6; Length 855;
Best Local Similarity 25.6%; Pred. No. 1.7e-06;
Matches 42; Conservative 25; Mismatches 72; Indels 25; Gaps 6;
Qy 3 FSNT-----RLYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVD-RDVEYRLYADISI 56
Db 693 FNNAAINYQLYGLRFLFIKKSASNRNNNDNTVREGDYIYLNIDNISDESRYVYVLVN- 751
Qy 57 AKPEIKILIRTSNNSNLSGLQIIVMDSIGNNCTMNFQ---NNGNIGLLGF----- 105
Db 752 SKETQLFLAPINDDPFFVDVLQIKKYVEKTYNCQLLCEKDTKTFGLGIGKFKVDYG 811
Qy 106 -----HSNNLVASSWYNNIRKNTSS--NGCFWGSFISKEHGWOE 142
Db 812 YVWDTYDNYFCISQWYLRRRISENINKLRLGCNQWQFIPVDEGWT 855

RESULT 12

US-11-077-550-141
; Sequence 141, Application US/11077550
; Publication No. US20050244435A1
; GENERAL INFORMATION:

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Query Match      13.7%; Score 103.5; DB 6; Length 834;
Best Local Similarity 21.9%; Pred. No. 0.013;
Matches 40; Conservative 22; Mismatches 42; Indels 79; Gaps 7;

QY      6  TRLYTGVEVIIR-----KNGSTDISNTDNFVRK---NDLAYINVVDREVRLYADISIAK 58
Db      885  SKLYTGNPTIKSVSDKNPYSRILGNDNIIHLMLYNSRKYMIIRDYDT---IYA----- 735

QY      59  PEKIILRTSNNSLGQIIIVMDSIGNNCTWNF-----QNNNGNIGLLGFHSNNLVAS 113
Db      736  -----TOGGECSQNCVVALKLOSLNLYGIGIFSINKIVSK 771

QY      114  SMY-----YNNIRKNTS-----SNGCFWSPISKEHG 139
Db      772  NKYCQIFSFRENTMLADIYKWPFPKNAVTPVAVTYETKLLSTTSFWMKFIISDPG 831

QY      140  WOE 142
Db      832  WVE 834

RESULT 14
US-11-087-099-10263
; Sequence 10263, Application US/11087099
; Publication No. US20060041961A1
; GENERAL INFORMATION:
; APPLICANT: Abad, Mark S. et al.
; TITLE OF INVENTION: Genes and Uses for Plant Improvement
; FILE REFERENCE: 38-21(53450)B EP
; CURRENT APPLICATION NUMBER: US/11/087,099
; CURRENT FILING DATE: 2005-03-22
; NUMBER OF SEQ ID NOS: 12464
; SEQ ID NO 10263
; LENGTH: 874
; TYPE: PRT
; ORGANISM: Clostridium acetobutylicum
US-11-087-099-10263

Query Match      11.7%; Score 88.5; DB 7; Length 874;
Best Local Similarity 28.5%; Pred. No. 0.44;
Matches 35; Conservative 22; Mismatches 49; Indels 17; Gaps 6

QY      1  NISNTRLYTGVETIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
Db      700  NISSLAKLTKLKSLMDHTGISDISLSGLTNLF---YLGVDNNIE-----DITSLK-- 749

QY      61  KIILRTSNNNSLGOIIVMDSIGN--NCTMNFQNNNG--GNIGLLGFHSNNLVAISSWY 117
Db      750  ---NLTMNLANKISQNKISNVDAIGNLTNLTLLDMNNNQISNAINAK--NSTKLISLSMH 805

QY      118  NNI 120
Db      806  NKV 808

RESULT 15
US-11-052-554A-171
; Sequence 171, Application US/11052554A
; Publication No. US20050288866A1
; GENERAL INFORMATION:
; APPLICANT: Sachdeva, et al.
; TITLE OF INVENTION: COMPUTATIONAL METHOD FOR IDENTIFYING ADHESIN AND ADHESIN-
; TITLE OF INVENTION: PROTEINS OF THERAPEUTIC POTENTIAL
; FILE REFERENCE: 30853/40359A
; CURRENT APPLICATION NUMBER: US/11/052,554A
; CURRENT FILING DATE: 2005-02-07
; PRIOR APPLICATION NUMBER: US 60/589,227
; PRIOR FILING DATE: 2004-07-20
; PRIOR APPLICATION NUMBER: IN 173/DEL/2004
; PRIOR FILING DATE: 2004-02-06
; NUMBER OF SEQ ID NOS: 763
; SOFTWARE: Patent in version 3.3
; SEQ ID NO 171

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; LENGTH: 2340
; TYPE: PRT
; ORGANISM: Rickettsia prowazekii
US-11-052-554A-171

Query Match      11.4%; Score 86; DB 7; Length 2340;
Best Local Similarity 24.5%; Pred. No. 2.5;
Matches 35; Conservative 28; Mismatches 64; Indels 16; Gaps 6;

Qy 1 NIFSNRLTYGVVIRKNGSTDISNTDNF---VRKNDLAYINVVDREVEY-RLYADISI 56
Db 968 NAFTNLKASDDTIGTVAKIINIGIQIGTQNFQFTIQVNNKNTLVSSVNGSINFGDANSQIL 1027

Qy 57 AKP-EKIKLIRTSNNSLQIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNL----- 110
Db 1028 SAPVDQTIKFI--NNLNETGGIITLDSNGNLTIS--GNNGIKLGKGNELSLNKGK 1083

Qy 111 --VASSWYNNIRKNTSSNGCFW 131
Db 1084 VTVNDLDDIQNIHQININNGALF 1106

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Search completed: March 2, 2006, 01:18:30
Job time : 5.80626 secs

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